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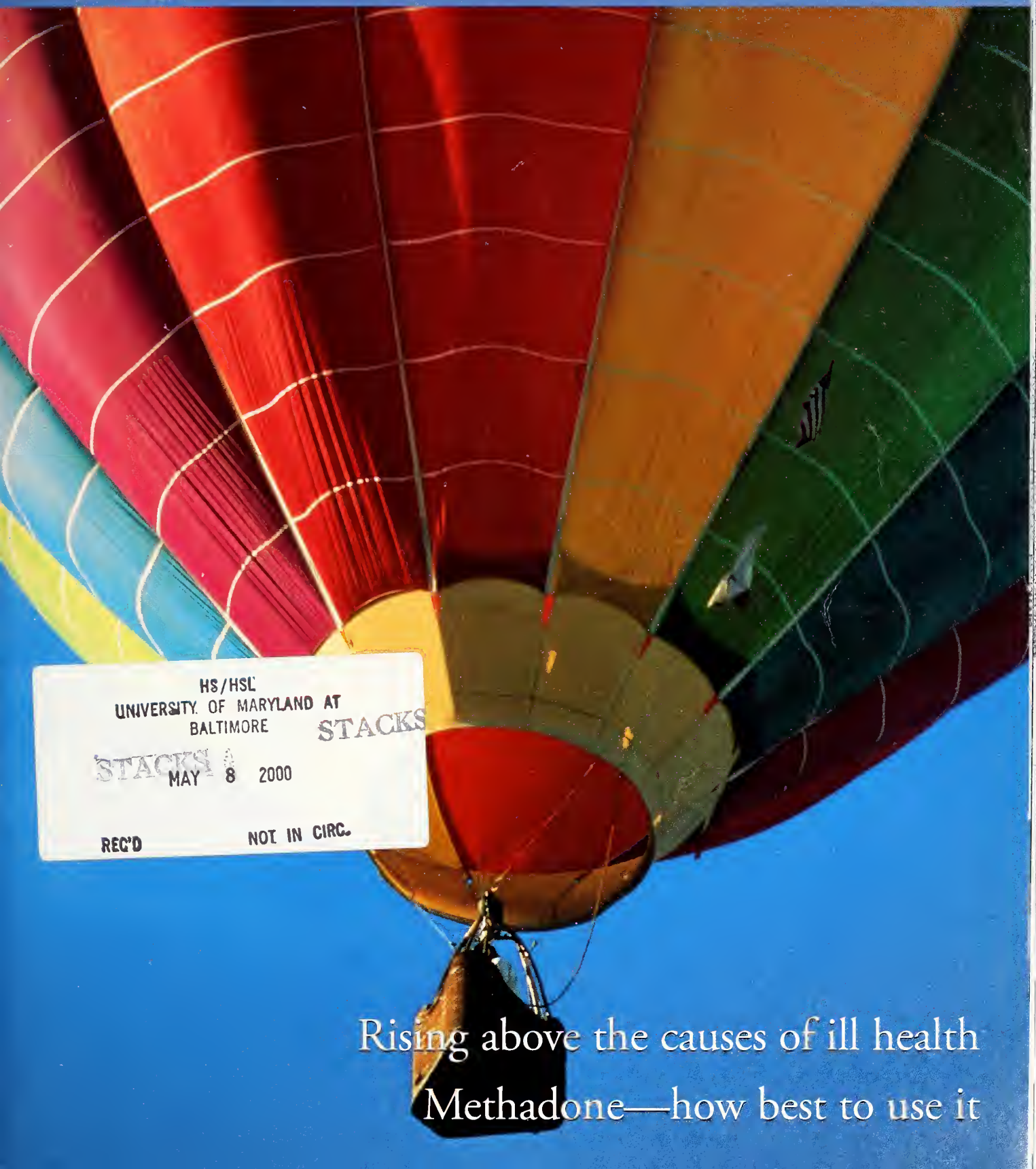

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Rising above the causes of ill health

Methadone—how best to use it

Eventually, Dr Ehrlich found the article he was looking for.

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Editor's pick

As we start this new century, medicine is still battling with the causes of ill health against which the most modern technology is fairly powerless. Poverty, war, natural disasters, and epidemics may need political solutions but are all public health issues that inevitably involve physicians. On p 33 Frederick M Burkle, Jr says there have been over 38 major conflicts since the end of the cold war, with 70% of those affected by the aftermath of starvation and epidemics being civilians, predominantly children. Instead of being unique, such complex emergencies have similarities and their paths can be predictable and preventable.

On a less dramatic but still global scale, substance misuse (our preferred term although none is perfect) devastates families and consumes health resources but is often dealt with poorly by health professionals. Substance misusers can be infuriating and time consuming to deal with. Physicians may be reluctant to intervene or even try to identify patients with substance misuse in the belief that they are hopeless cases anyway. In fact early intervention may benefit patients and society enormously (some of these patients will be physicians themselves of course—two doctors were the founders of Alcoholics Anonymous). On p 53 Cesar Aristeiguieta argues that primary care physicians should actively screen patients for alcohol, tobacco, and other drug misuse. Studies show that brief interventional techniques can identify patients at risk from misuse and improve health behaviors and bolster recovery after treatment (see Research Digest paper on p 27).

Reluctance to intervene may explain why vaccination is not offered to young injection drug users who are at risk of hepatitis B infection. On p 16 Karen Seal and colleagues found that only a quarter of young injection drug users had been offered vaccination. In an accompanying commentary Holly Hagan points out that the greatest vaccination completion rates among injection drug users (up to 85%) have been achieved in treatment settings where there is regular, sustained contact with the client.

Many injection drug users are also not offered methadone therapy, despite the Office on National Drug Policy being committed to making methadone treatment programs more widely available. On p 11 Steven B Karch and Boyd G Stephens say that out of an estimated 810,000 heroin addicts in the US, only 115,000 are participating in maintenance programs. Their study finds that although methadone is the seventh most frequent cause of drug-related death in the US (552 in 1996), the presence of the drug is often an incidental finding after death. In their study, over half the cases in which death was related to methadone, the person had also taken cocaine.

Both this study and the Medicine Cabinet on the use of methadone by Ilene B Anderson and Thomas E Kearney on p 43 point out that methadone detoxification programs must be carefully done to balance the risk of overdose against that of craving and returning to heroin misuse. Given that there is evidence that methadone can reduce heroin misuse and the transmission of HIV and hepatitis, as well as criminal activity, it is a shame it is not more widely available. Anderson and Kearney cite restrictive governmental regulations, the lack of clinics and stigma of addiction as obstacles.

In her Speaker's Corner on p 62, Paula Lozano hauntingly conveys the stigma of addiction, while a commentary that follows by Robert Matano and Stanley Wanat suggests that health professionals are also capable of stigmatizing attitudes to substance misusers. Sheila Blume in her Op-Ed (p 4) carries this argument one step further. The stigma our society attaches to substance misuse for over one hundred years, she writes, and the power of stigma is such that it continues to affect our willingness to treat those who are addicted and to pay for their treatment.

While the poor may carry fewer stigmas, they are still disadvantaged with respect to their health. On p 22 Michael C Wolfson and colleagues find that the association between income inequality and mortality in considerably stronger than can be accounted for by statistical artifact. Public health policy research should try to tease out the social factors that contribute to this inequality. Even so, says E Richard Brown (p 25), social disparities in health plague even the most egalitarian societies. Maybe public policies should involve a more complete and fundamental redistribution of income to ensure better health for the poor.

As this journal goes to press, the Pain Relief Promotion Act is wending its way through Congress. Jack Freer, an internist and ethicist warns, in an Op-Ed on p 5 that the bill threatens physicians' abilities to help relieve their dying patients of pain. In order to quash Oregon's right to physician-assisted suicide, Congress will make physicians nationwide afraid of prescribing adequate analgesia. Not an auspicious start to caring for patients in the new millennium.

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January 2000

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Op-Ed

Treatment of substance misuse in the new century

Physicians must confront the recurring attitudes of moralism and criminalization

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Services for people who are substance misusers have been greatly reduced under managed care. As newcomers to insurance coverage, they suffer from being "last in, first out." For example, between 1988 and 1998, benefit expenditures for addiction treatment fell by 74.5%, while benefit expenditures for general health fell by 11.5% (The Hay Group: "Substance Abuse Benefit Cost Trends, 1988-1998," unpublished report commissioned by the American Society of Addiction Medicine, Chevy Chase, MD, 1999). Unlike the public outcry against the practice of discharging women 23 hours after childbirth and "drive-by" mastectomies, few voices were raised on behalf of substance misusers. Many rehabilitation facilities closed. Edgehill, one such facility in Newport, Rhode Island, had a program that, despite measuring its success in peer-reviewed studies, was unable to sustain itself with insurance coverage. The publicly funded treatment system for substance misuse, supported by state and federal money (and, therefore, at the mercy of annual legislative budgets), was established in the 1960s and 1970s to serve the poor, the uninsured, and those in jails and prisons. It has also suffered as patients who were formerly insured crowd its caseloads and Medicaid programs are increasingly shifted to managed care. Most substance misusers go without treatment, and others fail to recover in response to inadequate care.[1]

Instead of providing needed services, jurisdictions around the country have begun to prosecute and imprison pregnant and postpartum drug misusers for "prenatal child abuse" and "delivery of controlled substances to a minor" (by the umbilical cord).[2] Few jails and prisons have anything positive to offer these women. Instead, the fear of prosecution acts as a powerful deterrent, keeping substance misusers who are pregnant from both the prenatal care and treatment of their dependency that they so desperately need.

American society has always had a deep ambivalence toward substance misusers. Benjamin Rush, 200 years ago, fostered enlightened understanding and medical treatment of the disease of "inebriety," as alcohol dependence was then known.[3] His ideas were accepted by some, and several treatments of dependency (for example, the "Keeley cure"[4]) were popular in the United States during the 19th century. A self-help movement, known as the Washingtonians and devoted to the "reclamation of drunkards," was also active. Although the movement died out, two of its treatment centers, known as Washingtonian Homes, were still active in 1900.[4]

At the same time, American society regarded substance misusers as morally corrupt. During the 19th century, a growing social movement dictated a radical cure for the nation's alcohol problem—prohibition. The passage of the Eighteenth Amendment in 1919 was meant to eliminate alcohol dependence; therefore, its treatment was thought to be unnecessary. Even after the amendment was repealed, delirium tremens and the complications of alcohol misuse received somewhat reluctant medical attention, and alcohol dependence was considered untreatable. Throughout the first half of the 20th century, it was not unusual for general hospitals to contain language in their bylaws that excluded patients with alcohol dependence. Prohibition left another legacy. Because of the stigma associated with illegal substances, research lagged seriously, a situation that has taken the rest of the century to correct.

America has been similarly ambivalent about the misuse of drugs. In the early 1900s, physicians prescribed morphine to outpatients who were dependent on opiates in an attempt to effect gradual withdrawal or, in some cases, de facto maintenance. However, the Harrison Anti-Narcotic Act of 1914 and its vigorous enforcement against physicians who tried to help substance misusers effectively ended outpatient treatment.[4] What had been a stigmatized condition but still subject to medical intervention was now a crime.

Public and medical attitudes toward addiction began to shift when Alcoholics Anonymous (AA), born in 1935, showed that alcohol misusers could recover. The development of effective treatment units incorporating AA referral and of therapeutic communities for heroin misusers encouraged public acceptance of the disease concept of addiction in the 1970s and 1980s.[5] Methadone treatment, introduced in 1965,[6] became widely accepted, and programs were organized in many states. Encouraged by the apparent success of the new therapies and a growing realization of the social costs of untreated dependency, health insurers began to cover these services, allowing the public sector to concentrate on the uninsured.

The federal government established the National Institute on Alcohol Abuse and Alcoholism and the National Institute on Drug Abuse in the 1970s, greatly advancing research in the area. The term "addiction medicine" was coined in the late 1980s by the American Society of Addiction Medicine and accepted by the American Medical Association as a self-designated specialty. Progress was certainly being made.

Society retained its ambivalence toward drug and alcohol abuse during the 1960s and 1970s. When illicit marijuana, heroin, cocaine, and hallucinogens became widely available and widely used, the nation declared "war on drugs" and began spending billions of dollars on interdiction and prosecution, filling the prisons to overflowing with drug offenders. In the 1980s and 1990s, treatment has once again fallen by the wayside.

In the coming century, physicians' task is to confront these recurring attitudes of moralism and criminalization. Physicians need to assure equitable insurance coverage for substance misuse and to redirect the resources of the war on drugs from reducing supply to reducing demand. Organized medicine must continue to speak for the right of those suffering from the disorders of substance misuse to receive treatment, while promoting research to expand treatment options. Primary care physicians owe it to their patients to improve their skills in the prevention and diagnosis of drug and alcohol problems, including addiction to nicotine. Well-researched techniques are available for screening and brief interventions for the not-yet-dependent misuser, as well as referral and treatment of those who are substance dependent.[7,8] Medical professionals must be heard in the halls of government and by patients in their offices and clinics, lest the progress made in the last century is lost and the nation returns to the hopelessness of the past.

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Congress and the Pain Relief Promotion Act

Will physicians be too scared to prescribe sufficient opioids to patients in pain?

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Chilling repercussions are likely to result from the Pain Relief Promotion Act of 1999, a bill (HR2260) passed by the House of Representatives and now being considered by the Senate (S1272; available at: http://thomas.loc.gov). In essence, it is a simple piece of legislation with two major provisions. The first essentially nullifies patients' rights to physician-assisted suicide under the Oregon Death With Dignity Act.[1] It does this by declaring that assisted suicide and euthanasia are not legitimate medical uses of federally controlled drugs and that practitioners who prescribe for these uses are subject to the criminal penalties of the 1970 Controlled Substance Act. The second recognizes the concept of "double effect"—that is, allowing actions with unintended adverse outcomes, if that action is the only way to bring about a more desirable outcome. The application here is the unintended (but acceptable) hastening of death through the use of pain medication, if that is the only way to relieve the suffering of a dying patient.

Ironically, the drafters of this legislation have themselves used double-effect reasoning in this measure. To stifle the actions of a single state, they risk denying pain relief to patients throughout the nation. When physicians realize that this law means that the US Drug Enforcement Agency and federal prosecutors will be judging their "intent" in prescribing, they are likely to back away from aggressive pain relief with opioid analgesics. Supporters of the legislation say that this will not happen, but knowledgeable witnesses speaking before congressional committees have testified otherwise.

This is not the first time that the US Congress has tried to stop Oregon's law. After a second referendum approved physician-assisted suicide by an even larger margin (60%-40%) than the first (51%-49%),[2] the Lethal Drug Abuse Prevention Act of 1998 (HR4006 in the House and S2151 in the Senate) was introduced in the 105th Congress. This proposed legislation would have permitted the revocation of Drug Enforcement Agency registration of physicians or pharmacists who had intentionally dispensed or distributed a controlled substance for the purpose of physician-assisted suicide. Because of opposition, this approach was abandoned and replaced in 1999 with the current bills.

The language of these bills, recognizing double effect and affirming the goals of palliative care (including modest

program funding), has improved the prospect of their passage over last year's bill. The Pain Relief Promotion Act of 1999 has garnered the support of the American Medical Association and the National Hospice Organization. Some advocates of humane palliative care believe that such legislation would further these goals.

Many others, however, are frightened by the prospect of the federal government second guessing physicians' intent when prescribing controlled substances. This proposed act provides for a criminal penalty against physicians: a maximum of 20 years in jail and license revocation. David Orentlicher, formerly director of the American Medical Association's Division of Medical Ethics, told the House Judiciary Committee: "Given the seriously disruptive and traumatic nature of criminal prosecutions, this act will make physicians err even more on the side of caution."[3] He concluded, "No matter how many words you attempt to write into this act to define and encourage good pain management and palliative care, the reality of the practice of medicine all over the country is that doctors would rather avoid risk, interrogation, and investigation at all costs."

In describing the effect of legal sanctions on physician behavior, Sandra H. Johnson, past president of the American Society of Law, Medicine, and Ethics, wrote,[4]

> Doctors' fears of disciplinary action and criminal prosecution are justified. There is no evidence that large numbers of physicians are sanctioned for their treatment of patients in pain, but the impact of the process on those physicians who are only investigated, or only charged but not disciplined, or only warned or cautioned but not penalized is severe.

Many physicians will think that a large dose of opioid will imply intent to bring about death. Indeed, many physicians are already uncomfortable with the large opioid doses recommended by experts in palliative medicine. One textbook on palliative medicine says, "While doses can become extremely large during this process, the absolute dose is immaterial"[5] as long as the balance between analgesia and side effects remains favorable. A retrospective review of 100 patients at Memorial Sloan-Kettering Cancer Center, New York, in 1990 documented the dosage of opioids in the last days of life. In the 24 hours before death, 23% of the patients required more than 300 mg of intramuscular morphine sulfate (equivalent to 900 mg of oral morphine), and 7% needed more than 2,000 mg of intramuscular morphine (6,000 mg of oral morphine).[6] With the threat of criminal prosecutions looming, how many physicians, fearing such large doses would suggest the intent to kill, would actually follow such recommendations?

If Congress were serious about pain, it would pass Senate bill S941 (House bill HR2188), the Conquering Pain Act, introduced by Senator Ron Wyden of Oregon. This thoughtful and comprehensive bill addresses many of the barriers to adequate pain management and quality care of dying patients, including reimbursement barriers. The bill would establish regional networks to help disseminate information about best practices in pain management. It also calls for surgeon general and Institute of Medicine reports on pain that would include identifying state and federal regulations that pose barriers to care. Unfortunately, the goal of pain relief for millions of Americans is apparently being sacrificed to the desire of this Congress to negate the mandate of the citizens of the state of Oregon.

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Conflict, what conflict?

When trust goes, so does the healing power of physicians

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There is almost nothing more important in the doctor-patient relationship than trust. By trust we mean the knowledge, on the part of patients, that whatever is discussed, whatever information is shared, and whatever advice is offered by the physician, is done so in his or her best interest. Trust in the "fiduciary" behavior of the physician—who will put his or her interest secondary to that of the patient—is one of the basic tenets of professionalism. A profession has unique, defining characteristics, including a group membership to which entry is limited, a special area of knowledge, a position of authority (because of that special knowledge), self-regulation and community

sanction, formal and binding codes of ethics, and a distinctive culture defined by values, norms, and symbols. Along with the status that society grants our (medical) profession, the handsome economic rewards, and patients upon whom we can learn and practice our art, society also bestows on us the autonomy to control and govern ourselves. All this is given in the expectation that we will deserve society's trust, by functioning in the interest of our patients. If we allow self-interest to trump our fiduciary relationship to patients and the community, society has the power to change the rules and take away the enormous privileges it has previously granted.

Such a process is evident regarding the medical profession in the United States today, where the intrusion of economic demands by practice organizations and non-medical administrators, regulation by non-physicians, threats from the ever-present plaintiff's bar, and even intrusion by legislators into the practice of medicine, threaten to further erode our relationship with patients, but are first and foremost a reflection of an already changing attitude of society towards physicians. Rather than blame others, however, we must look at our own behavior and its impact on this fragile relationship.

Rarely a day goes by without our newspapers reporting on breaches of trust by physicians. The details in each case differ, but they share the same dynamic: a trusted doctor (Dr Koop), healthcare organization (the American Medical Association, or the *New England Journal of Medicine*) or company (Pfizer) is shown to be behaving in a way that is clearly more self-interested than trustworthy. Physicians take "gifts" from drug companies and then spend patients' money to help make the same pharmaceutical industry the most profitable in the world. They recruit "research" subjects without advising them of the personal financial gain that accrues to them. They order more tests when this stands to earn them more money and fewer tests when that does. They take payments for journal "articles" written by ghost/writers paid by proprietary companies, and the commentaries and editorials they themselves write are greatly influenced by their personal and financial relationships to such companies. All these behaviors are directly opposed to what patients and society expect from us in return for the privileges they have bestowed.

Journals need to develop cogent and coherent policies regarding conflicts of interest: in writers, editorialists, reviewers, and editors. The *WJM* would define conflicts of interests as a set of conditions in which professional judgment about one area may be influenced by clear-cut competing interests, such as personal financial gain. We have no doubt that a conflict of interest exists when the *New England Journal of Medicine* publishes drug reviews written by authors who are, or have recently been, in the pay of the pharmaceutical industry.[1] Similarly, it is a conflict of interest when the former surgeon general—a man who has been held out as a beacon of righteousness and probity—runs a for-profit web page that offers advice through messages that are actually paid advertisements, without acknowledging this fact to consumers. Similarly, when the same man criticizes the findings of an expert public body without acknowledging that he is being paid by the industry (latex glove manufacturers)[2] that stands to lose because of the report in question, conflict of interest is clear, and societal trust is threatened.

Does any of this really matter? Isn't it just the American way? And isn't science pure, with its methods transparent, such that motives really don't make a difference to outcomes? So what if scientists receive grant support from a drug company—that won't influence what they write or think. So what if doctors receive boondoggles and cash from drug companies? That won't influence their prescribing practices. What of medical schools that sell their departments or hospitals for a few million in exchange for hanging a company's name over the front door—does that really impact the teaching and patient-care missions? And what of medical journals that are full of drug advertising—this in no way suggests that they will select research papers in such a way as not to offend the hand that feeds them—right? Perhaps the alarms and warnings are just being raised by a bunch of do-gooders who are ranting and raving about morals and righteousness without any evidence of harmful impact.

In fact many of these areas have been carefully studied, with the constant finding that conflicts of interest do make a difference. As pointed out recently in the *BMJ*,[3] the potential for financial gain will lead doctors to refer more patients for tests, operations, research studies, and hospital admissions and it will lead physicians to ask that drugs be placed on a hospital formulary.[4-6] Papers published in sponsored journal "supplements" are inferior in quality to those published in the mother journal.[7] Reviews and commentaries in which the author has a link to a company with a vested interest are more likely to be positive in their conclusions than are those with no such link.[8-10] Authors and researchers feel obligated to sponsoring companies and are concerned about what will happen if their findings are not those desired by the sponsor.[10,11]

Of course conflicts of interest need not be solely financial; they can be political, academic, religious or self-aggrandizing (related to prestige). And conflicts are not the sole domain of authors. Peer reviewers, government officials, and even journal editors can have conflicts of interest. It is impossible to avoid them entirely or to estimate in every case the presence or degree of conflict. Nevertheless we strive to limit clear-cut conflicts of interest wherever possible and to assure transparency, so that readers can evaluate for themselves the possibility of biased results, analysis, or recommendations. To this end, we have chosen to adopt many of the "conflict of interest" guidelines

used by the *BMJ* (see http://www.ewjm.com), and have added some of our own.

- We will not publish papers, articles, or commentaries that are not directly and personally written by the "author" (we will not accept prose that is penned by a company or public relations agency or prose for which the author has been paid by a party with a vested interest).
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We invite you, our readers, to inform us if there are biases or conflicts that we don't recognize. And we will do our best to listen to you and always strive to do better.

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Functional foods: health boon or quackery?

The FDA must get tough to safeguard consumers' health

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The dividing line between foods and drugs is blurring. Consumers can buy a growing variety of functional foods that claim to help prevent everything from the common cold to cancer. Some of these products are fortified with higher levels of naturally occurring substances, such as calcium, than are normally found in foods. Others contain medicinal herbs, such as echinacea (*Echinacea purpurea* root), Saint John's wort, and kava kava (derived from *Piper methystici rhizoma* which are not approved for food use.

Labels commonly boast that functional foods will increase energy levels, strengthen memory, or provide other benefits. Odwalla, Inc. markets "Serious Energy," a blend of several fruit juices that are "infused with power producing herbs including two forms of ginseng, gotu kola (*Centella asiatica*), green tea extract" and two mushroom derivatives. Neither the ginseng nor the gotu kola is an approved food ingredient. Although green tea itself is "generally recognized as safe" within the meaning of the Federal Food, Drug, and Cosmetic Act, extracts of green tea may not be seen as such. Whether the product offers energy and power beyond the calories from sugars is questionable.

Golden Temple sells "Herbal Brain Power" cereal with ginkgo (derived from the *Ginkgo biloba* tree) and gotu kola to "support mental alertness." Those herbal ingredients are unapproved, and the claim is unsubstantiated. Ben & Jerry's Homemade, Inc. markets a line of frozen smoothies (drinks) that contain such unapproved ingredients as echinacea and ginseng, two herbs with questionable benefits. "Raspberry Renewal," which contains ginseng, is promoted as an "energizer," a claim unsupported by studies. Robert's American Gourmet markets a snack food, Ginkgo Biloba Rings, as a "memory snack." There is no evidence that ginkgo improves memory. So what is our food supply turning into?

In some cases, added ingredients in foods offer real benefits. Decades ago, iodized salt and enriched flour helped prevent deficiency diseases. Today, orange juice fortified with calcium helps strengthen bones, flour en-

riched with folate helps prevent neural tube defects, and grain products fortified with oat bran or psyllium may reduce the risk of heart disease.[1]

But questions and problems arise when the added substances are poorly tested or unsafe, purported benefits are based on flimsy evidence, trivially small or dangerously large amounts of a beneficial substance are used, or foods are deceptively labeled. To date, other than deceiving consumers, functional foods have not caused harm. But it may only be a matter of time before consumers with hypersensitivities suffer serious adverse reactions from functional ingredients or from interactions between a functional ingredient and alcohol or a drug.

Functional foods may provide a major health boon or result in a new generation of quackery

The US Food and Drug Administration (FDA)[2] and state consumer agencies initially allowed companies to ignore or exploit loopholes in the law. Recently, however, the FDA has become more active. In 1998 and 1999, the FDA issued several courtesy letters regarding illegal attempts to market processed foods as dietary supplements to bring the products under weaker safety and labeling laws.[3] These products were Benecol margarine (McNeil Consumer Products Co., a subsidiary of Johnson & Johnson), containing plant stanol esters to promote "healthier lower cholesterol levels"; Kitchen Prescription soup (Hain Food Group) containing echinacea, claimed to "support your immune system," and soup containing Saint John's wort, claimed to "give your mood a natural lift"; and Actimel breakfast drink (Dannon Company) containing three yogurt cultures said to be "clinically proven to help fortify your body's natural defenses."

Ultimately, the plant sterols in Benecol margarine were determined to be "generally recognized as safe," and Hain stopped selling its soups. Dannon maintains that Actimel is a dietary supplement and continues to market the product while it negotiates with the FDA.

In September 1999, the FDA issued to Langer Juice Company what is probably its first warning letter concerning functional foods.[4] The FDA cited three kinds of legal violations. The first was failure to show safety: the company's juices contain ingredients (echinacea, grape seed extract, and *Ginkgo biloba*) that are not "generally recognized as safe" or approved as food additives. The second violation was unapproved health claims: such statements as "protect your heart as you quench your thirst" cannot be used until the FDA has approved their use. The third violation was claims about nutritional content: claims made for flavonoids were inappropriate because they have no established nutritive value. The FDA also told the company that any claimed effects for the functional ingredients must be linked to their nutritive value and not pharmacologic effects. It remains to be seen whether the FDA will invoke its power to seize these products or obtain an injunction to prevent their sale.

Welcome as they are, the FDA's enforcement efforts have been late and spotty. The composition of, and claims for, functional foods should be governed by judicious government regulation, not by corporate marketing strategies. The unbridled marketing of approximately $12 billion worth of dietary supplements annually[5] shows the potential for defrauding and making consumers unwell. Although most supplements are safe and honestly labeled, some are worthless, hazardous, or deceptively labeled.[6]

To prevent the spread of such mischief to the far larger food industry, the FDA and state agencies must be proactive. The FDA must initiate enforcement actions in a timely manner to demonstrate that it is serious about enforcing the laws governing ingredients and labeling claims. Industrywide regulations specifying what can and cannot be said on a label are essential. The Federal Trade Commission must follow the FDA's lead and prohibit the advertising of claims that the FDA would not permit on labels.

Functional foods may provide a major health boon or result in a new generation of quackery. Which outcome prevails will depend on whether government ensures that the foods are safe, nutritious, and honestly labeled.

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Mail

More on herpes zoster lesions

To the Editors,
The May 1999 Med.Pix feature by Usatine and Clemente, "Is herpes zoster unilateral?", nicely demonstrated the anatomic basis for bilateral herpetic skin lesions with unilateral spinal nerve involvement.[1] That the medial branch of the posterior primary ramus extends for some distance across the midline can be useful in the clinical evaluation of an apparent sensory deficit. In a patient with organic sensory deficit, the area of sensory loss often stops short of the midline because of the overlap of sensory fibers from both sides. On the other hand, the pinprick deficit in patients with functional loss or malingering often stops precisely at the midline,[2] which, of course, makes no sense anatomically.

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Should doctors disclose mistakes?

To the Editors,
I read with interest the article on disclosure of mistakes[1,2] while on duty in my emergency department in the Sierra foothills.

I agree that mistakes should be disclosed, but disclosure is less awkward if more information is given before procedures and the foreseeable complications and risks have been explained. To then have an "unfortunate but foreseeable" complication occur seems less troubling to patients. That their physician made every effort to appropriately manage their case and to explain possible consequences may only instill greater trust.

Complications of procedures occur in the best of hands, some due to errors, some to bad luck, and some to unique patient factors. Patients will have more realistic expectations if the realities of practice got more air time than the fantasies portrayed on "ER."

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Original Research

Toxicology and pathology of deaths related to methadone: retrospective review

ABSTRACT ● **Objectives** To clarify the mechanisms and risk factors of methadone toxicity and to describe the findings of deaths related to methadone use Design Retrospective review of case notes in the records of the San Francisco Medical Examiner comparing the findings in cases where methadone was deemed the cause of death with findings in decedents where methadone was an incidental finding, and with 50 age-matched, disease and drug free, trauma victims. ● **Results** 38 cases out of the 3317 processed by our office during 1997-1998 were identified in which methadone had been detected. Cases were mostly male 28/38 (74%) and white, 28/38 (74%). In 17 of 38 cases death was deemed to have been caused by methadone toxicity. For the group the mean blood methadone concentration for all 38 patients, was 957 ng/ml SD = .681, SE = .14). The mean blood concentration of the main methadone metabolite (EDDP) was 253 ng/ml, SD = 529 ng/ml, SE = .089. The mean ratio of methadone in the blood to EDDP in the blood was 13.6:1 Values were not significantly different between cases in which methadone toxicity was the cause of death and in those in which it was an incidental finding. Cocaine, or the cocaine metabolite benzoylecgonine, was detected in the blood or urine of 16/38 cases (42%); morphine in one-third (13/38) and methamphetamine in only one. Pulmonary edema was evident in all cases, coronary artery disease in 9/38 (24%) and cirrhosis in 7/38 (18%) of the methadone users. Necrotizing fasciitis was the cause of death in 4 of the 38 methadone users (11%). Nationally, a sizeable percent of methadone deaths are from drugs diverted from treatment programs. ● **Conclusions** The presence of methadone is often an incidental finding during postmortem examination which is unrelated to the cause of death. Postmortem measurements of methadone or its metabolite, or both, cannot be used in isolation to identify which deaths are associated with methadone toxicity.

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The Office on National Drug Control Policy is commited to making methadone treatment programs more widely available; deaths related to heroin use fall when where methadone replacement programs are available.[1-3] Unfortunately, methadone is toxic. A total of 552 methadone-related deaths were reported to the government in 1996, making methadone the seventh most frequent cause of drug-related death in the United States (nearly 4000 deaths related to heroin were reported during that same period).[4]

Most deaths that are related to methadone occur during the first few weeks of maintenance treatment; they are often the result of the dosage having been increased so quickly that fatal respiratory depression occurs.[5,6] The relative risk of fatal respiratory depression occurring during the first 2 weeks of methadone maintenance treatment is nearly seven times higher than that in untreated heroin addicts and 97.8 times higher than for patients who have been on methadone maintenance for more than 2 weeks.[3,7]

New opiate users who are using illicitly obtained methadone are also at risk. The amount of methadone diverted from treatment programs, and by inference the number of deaths occurring as a result, is limited because the number of heroin users actually enrolled in methadone programs is comparatively small. There are an estimated 810,000 heroin addicts in the United States but only 115,000 participate in maintenance programs.[4] If methadone becomes more widely available opportunities for diversion from treatment programs will increase and so will the number of deaths.[1] Some of these deaths might be prevented, especially if the underlying cause of death was better understood. Little is known about the pharmacokinetics of methadone in opiate users. The data that have been published are largely derived from studies of single doses given to healthy volunteers or intravenous doses given to patients with cancer. Whether such studies are relevant to the pharmacokinetics in chronic heroin users is not known. Furthermore, nearly all of these studies were undertaken before differences in the tissue distribution of

Summary points

- Isolated postmortem measurements of blood concentrations of methadone or its metabolite cannot reliably be used to discriminate between cases who have died from methadone toxicity and cases in which the presence of the drug is an incidental finding
- In nearly half of the cases in which death was related to methadone, cocaine was also found to have been used
- New opiate users take longer to clear methadone from their bodies, placing them at greater risk of overdose
- Necrotizing fasciitis occurring in methadone users seems to be more common than had previously been recognized; methadone may not be able to normalize the functioning of the immune system

methadone isomers were understood,[8] before methadone metabolites could be routinely measured, before chiral (special chemical techniques used to separate dextro- from levo- isomers of the same molecule) separation of methadone isomers was possible [9] and before the problem of determining the redistribution of drugs after death was appreciated.[10]

MATERIALS AND METHODS

Records of the San Francisco Medical Examiner were reviewed to identify all cases in which methadone had been detected from the beginning of 1997 through the end of 1998. Positive screening tests were confirmed using gas chromatography with mass spectrometry. Blood samples were screened in cases for which no urine was available. Concentrations of methadone in the blood and concentrations of the methadone metabolite 2-ethylidene-1,5-dimethyl-3,3-diphenylpyrrolidine (EDDP) were both measured using gas chromatography with nitrogen-phosphorous detector detection. Chiral separation was not performed.

The cause and manner of death were reviewed to determine whether death was related to methadone toxicity (drug related) or whether methadone was merely an incidental finding. Death certificates cannot be used to make this distinction because in California and most other states, drug-related deaths are considered to be accidents. Drug-related deaths were defined as those in which a direct toxic effect of methadone caused or contributed to death. Findings in cases classed as being drug related were compared with findings from cases in which methadone was incidental and also with findings from a group of 50 controls in which toxicology screening was negative and who had died as a result of trauma.

RESULTS

Demographic findings

A total of 38 cases in which methadone had been detected were identified out of 3317 cases processed by our jurisdiction during that period.. The decedents were predominantly male (28/38, SD = 9, SE =2 or 74%). The mean age of the 21 cases whose deaths were deemed to have been drug related was 46.2 (7.9) years. The mean age of the 17 cases whose deaths were deemed not to have been drug related was 46.3 years (SD = 7.9, SE = 1.9). Decedents dying from methadone toxicity were almost all white (1/17, 95%); decedents where methadone toxicity was an incidental finding were racially mixed, with 57% white (12/21), 38% black (8/21), and one Asian.

Anatomical and medical findings

Table 1 shows the mean weight of the heart, lungs, liver, spleen, and brain of the 38 cases in which methadone was detected and in 50 controls. The weight of each organ was significantly increased in all cases. Table 2 shows the nine most commonly encountered physical findings in the 38 cases. Terminal aspiration and pneumonia occurred in 6/38 (16%) cases. Necrotizing fasciitis, a much less common complication of drug abuse, was the cause of death in four (11%) cases. Necrotizing fasciitis occurred in middle aged people (40, 44, 46, and 54 years old); two were white, one was black, and the race of one was impossible to determine.

Toxicological findings

The mean interval before the postmortem examination occurred was 17.1 hours. The interval did not differ significantly between those cases in which death was deemed to have been drug related and in those in which it was not (17.7 vs 17.6 hours). Blood was available for measurement for all cases and urine in 16/38 (42%) cases. The mean blood methadone concentration for all 38 patients, was 957 ng/ml (SD = .681, SE = .14). The mean blood concentration of the main methadone metabolite (EDDP) was 253 ng/ml (SD = 529 ng/ml, SE = .089). The mean ratio of the concentration ratio of methadone in the blood to EDDP in the blood was 13.6:1. Urine concentrations of methadone were similar between the group in which death was deemed to have been drug related and in that in which it was not (mean concentration of 5.2 mg/L, SD = 3.6 mg/L, in drug related deaths and 5.86 mg/L, SD = 6.4 mg/L in cases where methadone was an incidental finding

Table 1 *Weight of organs at postmortem examination in 38 cases in which methadone was detected and in 50 controls in which toxicology screening was negative*

Group	Mean age (years)	Mean weight (g) Heart	Lungs	Liver	Spleen	Brain
Control (n = 50)	37.0	345	1175	1516	141	1336
Cases in which death was methadone related (n = 21)	48.3***	408*	1482*	2059*	278***	1305
Cases in which methadone was incidental (n = 17)	46.3***	437*	1308	1935*	304***	1389

*P < 0.05, **P < 0.01, ***P < 0.001 for comparison with controls.

Table 2 *Nine most common physical findings on postmortem examination in 38 cases in which methadone was detected*

Finding	Number (%) of cases
Track marks	13 (34)
Coronary artery disease	9 (24)
Cirrhosis	7 (18)
Pneumonia	6 (16)
Hepatic fibrosis	5 (13)
Fatty liver	4 (11)
Necrotizing fasciitis	4 (11)
Birefringent crystals	4 (11)
HIV infection	3 (8)

(p=0.797). Concentrations of EDDP were not significantly different between the two groups either.The EDDP concentration for drug related deaths was 6.55 mg/L (SD = 5.6 mg/L) vs 11.8 mg/L (SD = 16.7 mg/L, p = .3480).

The methadone/ EDDP ratio for the 38 cases was 13.58 (SD = 17.4, SE = 3.35 ; range 0.572 to 60). Cocaine or the cocaine metabolite benzoylecgonine, or both, was detected in 16/38 (42%) cases. Six of the 16 (38%) who had used cocaine also had detectable concentrations of morphine. Morphine was detected in nearly one-third (12/38) of the cases; concentrations ranged from 40 to 1728 ng/ml. Fentanyl was also detected in the case that also had the highest concentration of morphine. If the case with the highest concentration was excluded, the mean concentration of morphine in all 38 methadone users who were also taking morphine (presumably as heroin) was 345 ng/ml (SD = 325, SE = .09 ng/ml). Ethanol was present in 10 of 38 cases (26%) in a mean concentration 0.113 mg/dl (range 0.020-0.340, SD = .073, SE = .012). Other prescription drugs identified, which were generally present in subtherapeutic or therapeutic concentrations, are listed in table 3.

DISCUSSION

A redistribution of drugs through the body occurs after death making it impossible to estimate the true concentration of methadone or any other basic drug, such as a mild alkali in the period just before death until autopsy. [14] Therapeutic monitoring of people on methadone maintenance is problematic. Dosages are estimated based on pharmacokinetic measurements made in healthy volunteers not addicts. These estimates have proven to be extremely inaccurate suggest a falsely short terminal half-life and a falsely low volume of distribution in addicts.[12,13]

The S- form (S, Latin for sinister) of methadone exerts little narcotic effect but pure R- isomer is expensive to manufacture, so a racemic mixture of the D and S forms (or right and left) mirror images of the methadone is widely used. The isomers have different volumes of distribution (defined as the amount of drug in the body divided by the blood concentration at equilibrium) is much greater for the S form than for the R form, while the R form is cleared from the system (has a shorter half-life, much more quickly than the S form. At at equilibrium, more of the inactive S- form than the active R-form can be found in the bloodstream.[14–17] Chiral interaction can probably be used to explain why postmortem concentrations of methadone overlap among patients whose death is drug related and those whose death is not. The active R-isomer has a smaller volume of distribution than the inactive S- isomer, which means that more of the active drug, R-methadone, is found in the bloodstream than in the tissue. If only a small percentage of the S- isomer is released from tissue back into the bloodstream, measured concentrations will be falsely raised.

The conversion of methadone to the metabolite EDDP is mediated by liver microsomes, mainly CYP3A4 and possibly CYP2C9 and CYP2C19.[18] Methadone induces hepatic production of these microsomal enzymes, accelerating the metabolism of methadone in chronic users. These enzyme systems will not have been induced in new opiate users who will thus take longer to clear metha-

Table 3 *Other drugs detected at therapeutic or subtherapeutic concentrations in postmortem blood samples in 38 cases in which methadone was also present*

Drug	Number of cases (%)
Alprazolam	1 (3)
Amitryptiline	2 (%)
Carbamazepine	N/A
Diazepam	9 (24)
Chlorpheniramine	1 (3)
Clonazepam	1 (3)
Diphenhydramine	4 (11)
Doxepin	1 (3)
Ephedrine	2 (5)
Fluoxetine	1 (3)
Haloperidol	1 (3)
Imipramine	1 (3)
Promethazine	1 (3)

done from their bodies, placing them at greater risk of overdose. If other drugs are misused, or if prescription drugs are taken, the picture is further complicated since these drugs can induce, inhibit or compete for the same microsomal enzymes. The interactions between methadone and certain antiviral drugs are a recognized complication of treatment for HIV infection.[19]

In a recent study, antibodies to methadone were detected in more than half of the 46 heroin addicts who were tested.[20] Antibodies were detected in nearly all of the cases with HIV, and concentrations of methadone in the blood were higher in patients who were infected with HIV than in those who were not (398 ng/ml vs 265 ng/ml). Thus, it is impossible to draw conclusions about the toxicity of a given dose of methadone or of a particular concentration of methadone in the blood without the use of chiral separation and without additional clinical information and information about the patient's history.

Medical consequences

Most of the findings made during the postmortem examination, such as the terminal aspiration and pneumonia that occurred in 16% of cases, are recognized complications of intravenous opiate use. However, necrotizing fasciitis is a much less common complication, and it is not clear why four members of this cohort died from it. Necrotizing fasciitis is characterized by a rapid and progressive course, and unrecognized infection spreads along fascial planes. It is usually caused by group A β hemolytic streptococci but other Gram negative bacilli, alone or in combination with hemolytic streptococci, may also be responsible.[21] Usually there is also a history of alcoholism, diabetes mellitus, intravenous drug use, or some other disorder that impairs resistance.[22]

There was evidence of prior intravenous drug use in only one of the four cases of necrotizing fasciitis described here. In two of the cases complete toxicology testing identified the presence of methadone only. In the other two cases, cocaine and cocaine metabolite were found in both blood and urine samples. A link between cocaine use and necrotizing skin infection has previously been reported.[23]

The incidence of necrotizing fasciitis among intravenous drug users is clearly increasing in San Francisco, and these four cases may reflect the increased prevalence of this disorder in our jurisdiction.[24] But the occurrence of this disorder in those who may have been in methadone maintenance programs is particularly worrisome because methadone is supposed to help normalize immune responses, even in those drug users not infected with HIV.[25]

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COMMENTARY

Is methadone a miracle cure or an alternative evil?

The medical complications of opioid addiction were described in classic articles in 1967 by Cherubin[1] and Louria and colleagues.[2] These authors chronicled overdoses occurring commonly with respiratory arrest, endocarditis, septic emboli, pneumonia, tetanus, malaria, hepatitis and other disorders in injection drug users in New York City. They estimated that approximately 1% of those addicted to opioids died every year as the direct result of an overdose, and that in 1964 in New York City, there were nearly 400 deaths related to opioid use.[1,2] Although criminal behavior and the financial impact of providing medical care were not discussed, the implications of addiction became clear. Cherubin wrote of those who were addicted that "it is an element of their place in the world that they . . . have largely been ignored medically" and pleaded that "the past neglect . . . be reversed".[1]

Almost simultaneously, as psychiatrists and law enforcement officials were failing to stem the tide of opioid addiction and its complications, the noted experts on metabolism, Dole and Nyswander, hypothesized that heroin addiction was a metabolic problem.[3] As in the treatment of other diseases, pharmacotherapy was indicated, and careful titration of methadone, a long acting opioid, was the solution. Dole and Nyswander noted that methadone replacement provides two unique effects: at low doses it offers relief from withdrawal, and at higher doses methadone blocks the euphoria associated with heroin use. Quite rapidly, federally funded methadone clinics were born. Thirty years later, over 100,000 patients are enrolled in methadone maintenance programs.

Karch and Stephens offer insight into the deaths of 38 patients on methadone maintenance who died in San Francisco. Rare infectious diseases such as necrotizing fasciitis are still common in addicts, and this finding may suggest a direct effect of opioids on the immune system. It was disappointing that cocaine use was detected in nearly half the people in whom methadone was detected and that other drugs, such as benzodiazepines, were also commonly used. However, although rigid criteria for defining deaths related to methadone were not specified, the authors identified only 21 cases in which methadone toxicity was the cause of death in 1 year in a large municipality.

Since replacing heroin with methadone fails to cure all of the problems associated with addiction, we should ask if the objectives of methadone maintenance are being met as measured by a decrease in the number of deaths caused by opioids, a reduction in the number of addicts contracting an infectious disease, and a reduction in criminal behavior.

Although there is little epidemiological data that would allow a direct comparison of mortality from methadone with mortality from heroin, a study by Caplehorn and Drummer using a cross-sectional design showed that methadone maintenance saved more than two lives for every death related to heroin in New South Wales.[4] Interestingly, they noted that since most of the deaths related to methadone occurred during the first 2 weeks of treatment, enhanced monitoring of patients during this time could improve the success of the programs. Methadone maintenance was originally designed as a treatment for inpatients.

In the 1960s and 1970s the most common infectious disorders associated with injection drug use were endocarditis, hepatitis, and pneumonia.[1,2] Recent data show that when adequate doses of methadone are used, long term maintenance is effective in preventing infection with HIV, probably resulting from the combined effects of reduced needle sharing and counseling about safe sexual practices.[5] In addition, the structured environment of methadone maintenance clinics has proven to be an excellent location in which to screen for and treat tuberculosis in patients considered to be at high risk.[6]

Although it may be argued that the benefits of methadone maintenance are largely conferred on the individual, the prevention of criminal behavior has its greatest rewards in the community. Numerous studies show that methadone maintenance reduces criminal behavior even when participants continue to use illicit non-opioid substances.[7–10]

Methadone is not a miracle cure. Simply providing a long acting synthetic opioid to patients who have important social, financial, and, possibly, genetic pressures to maintain their addiction cannot be expected to prevent an overdose, the misuse of other drugs, infections, and crime. The data, however, strongly show that the benefits of methadone maintenance far outweigh its costs and risks. Previously, emphasis was placed on providing the best therapeutic dose[11,12]; more recent data suggest that greater benefit is derived from the structured environment and the interpersonal interactions provided during counseling.[13] Strong programs are needed to ensure the continued success of methadone maintenance; these programs must combine public health initiatives, patient education, job training, and social support to augment drug replacement. Only when these resources are added to the simple act of drug replacement can we gain the maximum reduction in risk from methadone maintenance.

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Risk of hepatitis B infection among young injection drug users in San Francisco: opportunities for intervention

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ABSTRACT **Objective** To compare the demographic characteristics and risk behaviors for hepatitis B infection among injection drug users younger than 30 years with those aged 30 or older and to evaluate participants' knowledge, attitudes, and experiences of infection, screening, and vaccination against hepatitis B virus. **Design** A systematic sample of injection drug users not currently in a treatment program were recruited and interviewed at needle exchange programs and community sites. **Participants** 135 injection drug users younger than 30 years and 96 injection drug users aged 30 or older. **Results** Injection drug users younger than 30 were twice as likely as drug users aged 30 or older to report having shared needles in the past 30 days (36/135 [27%] vs 12/96 [13%]). Injection drug users younger than 30 were also twice as likely to report having had more than two sexual partners in the past 6 months (80/135 [59%] vs 29/96 [30%]). Although 88 of 135 (68%) young injection drug users reported having had contact with medical providers within the past 6 months only 13 of 135 (10%) had completed the hepatitis B vaccine series and only 16 of (13%) perceived themselves as being at high risk of becoming infected with the virus. **Conclusion** Few young injection drug users have been immunized even though they have more frequent contact with medical providers and are at a higher risk for new hepatitis B infection than older drug users. Clinicians caring for young injection drug users and others at high risk of infection should provide education, screening, and vaccination to reduce an important source of hepatitis B infection.

INTRODUCTION

Between 200,000 and 300,000 people become infected with hepatitis B virus in the United States each year, and about 4000 to 5000 people die from cirrhosis and hepatocellular carcinoma.[1-3] About 20% of these infections occur among injection drug users, mainly through the sharing of contaminated injection equipment and unprotected sexual contact. Over 80% of injection drug users who have been injecting for longer than 10 years are infected with hepatitis B virus.[3,4] The risk of becoming infected with the virus is highest during the first years of injecting; within 1 to 5 years of starting to inject drugs, 50% of drug users may already have been infected.[4] About 6% to 10% of injection drug users who are infected with hepatitis B virus become chronic active carriers who may infect others; they may also develop end stage liver disease.[1,4]

When hepatitis B vaccine was introduced in 1982, the Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices recommended that groups at high risk of infection should be vaccinated; those defined as being at high risk were injecting drug users and those who have more than two sexual partners in 6 months.[5, 6] However, the incidence of hepatitis B infection among injection drug users increased by 80% between 1982 and 1990 because targeted vaccination programs were never implemented, largely due to the perceived difficulty of ensuring that high risk groups completed to the vaccine series.[1,4,7-10] In 1991 and again in 1995, the Centers for Disease Control called for the

Summary points

- Injection drug users, especially those younger than 30, engage in behavior that puts them at a high risk of becoming infected with hepatitis B virus
- Few of these younger drug users have been vaccinated against hepatitis B
- Many younger drug users are willing to be vaccinated
- Sufficient opportunities for vaccination exist at sites frequented by these young users such as needle exchange programs
- Appropriate strategies should be developed to ensure that members of this high-risk group are vaccinated

universal vaccination of infants and adolescents.[2,6] In 1996, the average hepatitis B vaccine coverage rate among adolescents reached only 65% nationally, and it was considerably lower among those adolescents considered to be at high risk of infection.[11,12]

In San Francisco, about 13,500 to 15,000 people are injection drug users, and roughly 3000 are younger than 30 years old.[13,14] We surveyed injection drug users to determine if they engaged in behaviors that put them at risk for hepatitis B infection and to assess their knowledge of infection and prior experiences with screening and vaccination.

PARTICIPANTS AND METHODS

Between the beginning of September 1996 and the end of November 1996, a sample of 135 injection drug users was recruited for a brief interview. A systematic sample of injection drug users 30 years of age or older (n = 96) was recruited from eight needle exchange sites by distributing numbered raffle tickets and inviting those whose ticket ended in one of three pre-specified digits to participate in the study. Consecutive samples of injection drug users younger than age 30 (n = 135) were recruited from the same eight needle exchange sites, a young drop-in center, and a single residency occupancy hotel that served as an information needle exchange for younger injectors. The participants recruited were eligible for inclusion if they spoke English, had injected within the past 30 days, and were not in a drug treatment program.

Informed consent was obtained. Standardized, face-to-face interviews were conducted by trained peer interviewers who were current or former drug users, by outreach workers, or by professionals who had experience working with injection drug users. During the interview, participants were asked to provide demographic information and information on their health, sexual and drug use behaviors, their knowledge and beliefs about hepatitis B, and whether they had ever been tested for hepatitis B or offered vaccination. Interviewers used an open-ended format to ask participants whether they would be willing to accept the vaccine had it been offered at the time of the interview and why.

Medians and ranges were calculated for continuous variables, and percentages were calculated for categorical variables. Statistical comparisons were made between injection drug users younger than 30 and those aged 30 and older using the χ^2 or Fisher's exact test for categorical variables and the Mann-Whitney test for continuous variables. The participant's knowledge score was calculated as the percentage of the statements about hepatitis B answered correctly; this was dichotomized as <75% or ≥75% correct. The study was approved by the Committee on Human Research at the University of California, San Francisco.

RESULTS

Of the 321 injection drug users initially contacted, 231 (72%) consented to be interviewed. The demographic characteristics of participants are presented in table 1. Drug use behaviors and sexual behaviors that put injection drug users at a high risk of becoming infected are shown in table 2. The younger injection drug users (aged <30) were more than twice as likely to report sharing needles as older injection drug users (36/135 [27%] vs 12/96

Table 1 *Demographic characteristics of injection drug users by age group, San Francisco, 1996*

Characteristic	Age <30 years (n = 135)	Age ≥30 years (n = 96)
Median (range) age (years)	22 (14-29)	41 (30-64)
Sex*		
Male	91 (67)	70 (73)
Female	41 (30)	23 (25)
Race		
White	99 (73)	44 (46)
African American†	4 (3)	38 (40)
Asian or Pacific Islander	3 (2)	1.0 (1.0)
Hispanic	7 (5)	8.0 (8.0)
Mixed race or other race	22 (16)	5.0 (5.0)
Completed high school or age-appropriate number of years of education†	65 (48)	73 (76)
Currently homeless†	60 (44)	10 (10)
Median number (range) of places stayed in past 6 months†	7 (1-200)	1 (1-30)
Median number (range) of consecutive months in San Francisco†	6 (0.5-392)	180 (1-828)

Values are numbers (percentages) unless otherwise indicated
*Data were missing for some participants
†P ≤ 0.001 for difference between the two age groups

Table 2 *Injection behavior and sexual behavior of injection drug users by age group, San Francisco, 1996*

Behavior	Age <30 years (n = 135)	Age ≥30 years (n = 96)
Injection behavior		
Median (range) number of years injecting	5 (0-17)	20 (1-47)
Median total number (range) injections in past month	50 (1-600)	90 (1-900)
Drugs injected in past month*:		
Heroin	104 (77)	76 (79)
Cocaine	34 (25)	32 (33)
Methamphetamine*	70 (52)	28 (29)
Shared needles past month*	36 (27)	12 (13)
Ever overdosed†	59 (44)	42 (44)
Had drug treatment in the past year‡	42 (31)	36 (38)
Sexual behavior		
Type of sexual behavior in the past 6 months:		
Men		
Exclusively heterosexual*	62/91 (68)	49/70 (70)
Bisexual	28/91 (31)	13/70 (19)
Exclusively homosexual	1/91 (1)	8/70 (11)
Women		
Exclusively heterosexual	17/41 (42)	12/23 (52)
Bisexual	22/41 (54)	9/23 (39)
Exclusively homosexual	2/41 (5)	2/23 (9)
Had ≥2 sexual partners in past 6 months*	80 (59)	29 (30)
No condom used during last sexual encounter§	59/126 (47)	39/67 (58)
Had a sexually transmitted disease in the past year	16 (12)	3 (3)
Exchanged sex for money or drugs in the past year	14 (10)	9 (9)

Values are numbers (percentages) unless otherwise indicated
*P < 0.05
†Self-reported
‡Includes methadone treatment
§Denominator is the number who were sexually active in past 6 months

[13%]). Younger participants were more likely than older participants to report having had two or more sexual partners in the past 6 months (80/135 [59%] vs 29/96 [30%]).

A total of 88 of 135 (68%) participants younger than 30 had seen a healthcare provider within the past 6 months; 16 of 135 (13%) perceived themselves to be at high risk of becoming infected with hepatitis B virus (table 3). Among younger injection drug users the self-perceived risk of infection was significantly associated with needle sharing but not with sexual behavior (data not shown). Although 127 of 135 (94%) younger participants said that they would have been willing to be tested for hepatitis B infection if it had it been offered, only 54 of the 135 (40%) reported ever having been tested.

Thirty-four (25%) of the 135 participants younger than 30 reported having been offered vaccination, and 24 (18%) had accepted it. Of these, 13 (54%) had received all three doses (10% of participants younger than 30); however, 96 of 135 (71%) younger participants said that they would have accepted the vaccine if it had been offered. Among the younger participants the most frequently cited reasons for being willing to be vaccinated were a desire to prevent hepatitis B, a fear of dying, and knowing someone who had hepatitis B. Altogether, 79 of the 96 (82%) participants younger than 30 who were willing to be vaccinated anticipated that they would return for the last two doses of the vaccine, and 83 (87%) identified needle exchange sites as the preferred location for vaccination. Of the 39 of the 135 (29%) participants less than 30 years of age who said that they would refuse the vaccine if it was offered, the most frequently cited reasons were that they did not believe themselves to be at risk of becoming infected, that they had a general distrust of the medical system, and that they would not be able to remain in one place for the 6-month series.

The median score on the 19-item test of knowledge about hepatitis B infection was 68% for the younger injection drug users and 63% for the older users (table 3). Only 48/135 (36%) of younger participants answered 75% or more of the questions correctly; these younger users were more likely than those who scored < 75% to say that they would accept vaccination at the time of the interview (40/48 [83%] vs 61/87 [70%]) (data not shown).

DISCUSSION

We chose to focus on injection drug users who were younger than 30 because in the United States the highest incidence of new hepatitis B infection has occurred among injection drug users aged 15 to 29.[14-16] Our results show that young injection drug users are significantly more likely to engage in high-risk behavior than older users. Although the majority of younger injection drug users reported having recent contact with healthcare providers, they still greatly underestimated their risk of becoming infected with hepatitis B virus, few had been screened, and even fewer had been fully vaccinated. Although knowledge of hepatitis B among younger injection drug users was incomplete they did understand that infection could be prevented by vaccination. The majority of younger users indicated that they would accept vaccination if it was offered.

In San Francisco, young injection drug users seem to be demographically distinct from those aged 30 or older. When compared with older injection drug users, younger users were far more likely to be transient and homeless or temporarily housed, and barely half had completed the appropriate number of school years for their age.[17,18] Other studies have shown that a flexible schedule for administering hepatitis B vaccine can provide immunity for a greater number of people through improved compliance[25-27]; our findings emphasize the need to develop such programs.

Table 3 *History of infection, screening, and vaccination against hepatitis B virus among injection drug users by age group, San Francisco, 1996*

Variable	Age <30 years (n = 135)	Age ≥30 years (n = 96)
Time since last visited healthcare provider*		
<6 months	88 (65)	63 (66)
6-18 months	24 (18)	20 (21)
>18 months	23 (17)	13 (14)
Self-perceived chance of being infected with HBV*		
High	16 (12)	6 (6)
Some	50 (37)	30 (31)
None to very little	56 (42)	32 (40)
Amount of concern about HBV infection:		
Not or somewhat worried	116 (86)	68 (71)
Worried or very worried	19 (14)	28 (29)
Ever screened for HBV infection†	54 (40)	50 (52)
Ever offered vaccination against HBV‡	34 (25)	12 (13)
Ever accepted vaccination against HBV†	24/34 (71)	9/12 (75)
Number of doses received in vaccine series†:		
One dose	7 (5)	1 (1)
Two doses	4 (3)	4 (4)
Three doses	13 (10)	4 (4)
Would accept screening for HBV§	127 (94)	86 (90)
Would accept vaccination§	96 (71)	76 (79)
Would return for all 3 doses over 6 months¶	79/96 (82)	73/76 (96)
Believe vaccine to be safe	55 (41)	84 (88)
Median percentage (interquartile range) score correct on items measuring knowledge of HBV	68 (58-84)	63 (45-79)
Score >75% on test measuring knowledge of HBV	48 (36)	26 (27)

Values are numbers (percentages) unless otherwise indicated.
HBV = hepatitis B virus.
*Data were missing for some participants
†Self-reported
‡Percentage of those who reported accepting vaccine when offered
§If offered at the time of the interview
¶Percentage who would have accepted vaccination if offered at the interview

In our sample, injection drug users younger than 30 were more likely to have engaged in high-risk sexual behavior (such as not using a condom during their last sexual encounter) and injecting behavior (such as sharing a syringe) than their older counterparts, activities that place them at a higher risk of becoming infected. As in this study, other studies have also found that injection drug users younger than 30 are more likely to share syringes and engage in sex with multiple partners.[14,16-18] Drug treatment programs and needle exchange programs have been shown to reduce high-risk behavior but young injection drug users (24% of our sample was < 21 years) lack access to these programs because most drug treatment programs are restricted to those aged 18 or older and young injectors in San Francisco tend to use sanctioned needle exchange programs (JA Hahn, unpublished data). In contrast, 68% of the younger participants in this study had had access to medical care within the past 6 months. Thus, healthcare providers have a unique opportunity to reach this population: they should inquire about the use of injected drugs and high-risk sexual behavior and, if indicated, offer vaccination to those at high risk of becoming infected with hepatitis B virus.

Despite recommendations that people at high risk of becoming infected with hepatitis B virus should be targeted for vaccination, less than one-quarter of youths and young adults considered to be at high risk have been vaccinated.[7,10,12,19] In our sample, only 10% of younger participants reported having completed the hepatitis B vaccine series. Undervaccination of high-risk groups may stem from a failure of the public health system and providers to emphasize the health risks of infection and to develop programs for vaccination.[12] We did not identify sites where participants received health care. Low rates of vaccination might also reflect the fact that injection drug users tend to receive their medical care in emergency or urgent care settings, sites that do not provide immunizations routinely.[20,21] However, these sites might be ideally suited to providing targeted public health interventions, such as education about hepatitis B infection and immunizations, to those who would otherwise not be reached.

Attempts to vaccinate injection drug users and high-

risk adults against hepatitis B infection have met with variable results; some studies have reported only limited success.[8,22] Clinicians have attributed their own reluctance to offer vaccinations to drug users to economic disincentives, concerns about completion of the series, an inability to identify and contact young adults at risk, and their own negative attitudes towards injection drug users.[1,2,9,10,12] Long-term adherence to protocols designed to prevent disease, including vaccination against hepatitis B, has been achieved through the use of innovative and cost-effective approaches (such as reminder calls or postcards, the provision of cash or other incentives, the use of peer outreach, and offering reduced waiting times) among young people and drug users recruited from a variety of settings (J Klausner, unpublished data).[9,23,24] Programs in which vaccinations are provided by clinicians sensitive to the needs of young injection drug users, and that have used flexible dosing schedules, have achieved significantly higher levels of immunity through ensuring that participants receive all three doses of the vaccine.[25-27]

Conclusion

Injection drug users younger than 30 are at a higher risk of acute hepatitis B infection because they are more likely to engage in high-risk sexual behavior and injection practices than older injection drug users. Although younger users report frequent contact with health providers, their knowledge about hepatitis B infection is incomplete, they underestimate their risk of infection, and few have been vaccinated.

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capsule

Nostrils smell differently Collectors of science trivia will be interested to learn that air flows faster through one nostril than the other, and that the fast flow switches between nostrils every few hours (*Nature* 1999;402:35). The effect of this nasal oddity is that smells are perceived differently through each nostril. No one knows why we have evolved this way, but scientists guess that it has something to do with expanding our repertoire of perceptible smells.

COMMENTARY

Vaccination could improve overall health in a high risk population

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Although hepatitis B vaccine has been available since the early 1980s and is highly effective and long lasting, the rate of vaccination among injection drug users is extremely low despite the fact that the highest incidence of infection with hepatitis B is found in this group. The incidence of hepatitis B among cohorts of injection drug users who have previously tested negative ranges from 5% to 20% per year, and estimates of the proportion who have serological markers for vaccination (surface antibody to hepatitis B) range from 3% to 11%.[1,2] From 50% to 90% of injection drug users in the United States have natural immunity to hepatitis B as a result of previous exposure to the virus,[2] and this has probably had a greater net effect on limiting transmission than past vaccination campaigns; it cannot be seen as a public health achievement.

The study by Seal and colleagues addresses this issue by describing the attitudes of injection drug users in San Francisco to immunization against hepatitis B and their experiences. Seal et al compared young injection drug users (that is, those younger than 30) with older users because most drug users become infected with hepatitis B virus during the first few years after beginning to inject. They also found that younger drug users were twice as likely as older users to report engaging in injecting and sexual behaviors that would increase the risk of becoming infected with hepatitis B virus. Thus, they recommend that efforts to prevent hepatitis B should focus on young injection drug users and those who have recently begun to inject. Approaches to vaccination should probably be determined locally, as illustrated by a cohort study of injection drug users in Seattle, where 713 of 1048 (68%) who had been injecting for 10 years or less tested negative for core antibody to hepatitis B (unpublished data). This study used a random number scheme to select participants from nine different settings including drug treatment programs to ensure that the sample was broadly representative of injection drug users in the community.[3] Seal et al also reported that the majority of both young and older injection drug users had recently visited a healthcare provider but that despite these recent contacts, few had ever been screened for hepatitis B, offered a vaccination, or given any of the vaccinations that make up the series. They concluded that these visits to healthcare settings might provide opportunities for vaccinating young injection drug users.

Their study describes the problem from the viewpoint of the injection drug user although interpretation of the findings is limited because there is no serologic data verifying the self-reported history of infection and vaccination. The small proportion of the study population that reported having been offered vaccination (25% of younger injection drug users and 13% of older users) is both notable and distressing. The failure of healthcare providers to offer vaccinations seems to arise from a belief that the patient may not return to complete the series and that patients may already be infected [4]. The greatest success in vaccination completion rates among injection drug users (70% to 85%) has been achieved in drug treatment settings where there is regular, sustained contact with the client[5-7]; however, even one or two doses of the vaccine may be sufficient to prevent severe hepatitis and chronic infection. In a recent survey of injection drug users in England, 18% of those who reported having previously been vaccinated tested positive for hepatitis B core antibody.[8] No data exist to indicate that injection drug users who are already infected are being vaccinated.

Only a minority of injection drug users are enrolled in drug treatment programs at any time, however sporadic contact with healthcare providers in other settings does occur. Community-level studies are needed to test a system in which each contact with an injection drug user is viewed as an opportunity for providing vaccination against hepatitis B. Agencies that might participate in this effort include health departments, prisons and jails, needle exchange programs, drug treatment agencies, physicians' offices, community clinics, hospital emergency departments, and community outreach programs. Wallet-sized vaccination records could be handed out to patients at high risk to allow them to keep track of vaccinations and screening tests. Developing a system to coordinate vaccinations may have other important benefits and improve the overall health of members of a high-risk population.

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Relation between income inequality and mortality: empirical demonstration

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ABSTRACT ● **Objective** To assess the extent to which observed associations between income inequality and mortality at population level are statistical artifacts. ● **Design** Indirect "what if" simulation using observed risks of mortality at individual level as a function of income to construct hypothetical state-level mortality specific for age and sex as if the statistical artifact argument were 100% correct. ● **Method** Data from the 1990 census for the 50 US states plus Washington, DC, were used for population distributions by age, sex, state, and income range; data disaggregated by age, sex, and state from the Centers for Disease Control and Prevention were used for mortality; and regressions from the national longitudinal mortality study were used for the individual-level relation between income and risk of mortality. ● **Results** Hypothetical mortality, although correlated with inequality (as implied by the logic of the statistical artifact argument), showed a weaker association with the level of income inequality in each state than the observed mortality. ● **Conclusions** The observed associations in the United States at the state level between income inequality and mortality cannot be entirely or substantially explained as statistical artifacts of an underlying individual-level relation between income and mortality. There remains an important association between income inequality and mortality at state level above anything that could be accounted for by any statistical artifact. This result reinforces the need to consider a broad range of factors, including the social milieu, as fundamental determinants of health.

INTRODUCTION

Considerable debate surrounds the impact of socioeconomic circumstances on individuals' health. Recent results suggest that there is a link not only between individual socioeconomic circumstances and health but also between the socioeconomic milieu in which individuals live and their health. Research has shown that greater levels of inequality in income among nations, states, or cities in the United States, or other geographically defined populations, are associated with higher mortality.[1-4]

Concerns have been raised by Gravelle, however, that these results may be no more than a statistical artifact.[5] Gravelle points out, as others have noted previously,[6, 7] that a "diminishing returns" protective effect of higher individual income on individual risk of death is sufficient to account for differences in mortality between populations if there are differences in the extent of wealth and poverty, hence in the degree of income inequality.

The logic of this argument is correct. At the individual level, higher income (or some closely related but unmeasured factor, such as social status, for which income is a proxy) is causally associated with greater longevity.[8] Moreover, while an extra dollar of income is protective, the amount of protective effect tails off as total income rises.[8,9]

At the level of a population there is always some mixture of people with low, middle, and high incomes. If one population has a more equal distribution of income than another, this is equivalent to there being fewer individuals with either very high or very low incomes and more with incomes closer to the middle. But if a poorer individual is $1000 better off in a second population the beneficial effect on his or her risk of mortality is larger than the adverse impact on the risk of some richer person being $1000 worse off because of the diminishing protective returns of additional income. Thus, a population with a more equal distribution of income can have a lower mortality, other things being equal, solely as a result of a generic curvilinear individual-level causal relation between income and risk of mortality.

Summary points

- Evidence is accumulating that living in a society with greater inequalities in income predisposes its members to higher mortality; however, there is widespread evidence that, for individuals, higher income is protective
- This individual-level relation could "explain" the former societal-level relation
- The strength of observed levels of association between income inequality and mortality, however, may go beyond what can be explained as a statistical artifact of an individual-level relation between income and mortality
- The empirical analysis reported here, based on data from 1990, suggests that the association between income inequality and mortality is considerably stronger than can be accounted for by any statistical artifact
- Research underpinning public health policy should therefore take a broad view of the importance of the social milieu as a fundamental determinant of health

This logical possibility, however, is not a sufficient reason to dismiss the potential importance of inequality in income as an independent determinant of population-level mortality. This remains an empirical question.

We approached this question indirectly by first estimating a generic individual-level relation between income and mortality. We then simulated the extent to which variations in the distribution of income across populations can account for the observed population-level relation between income inequality and mortality. In other words, we asked "what if" our well specified relation between individual-level income and mortality were fully causal: the key step in Gravelle's argument. We therefore applied this relation to all individuals in a population group based on its actual income distribution and then calculated the expected mortality. The extent to which we reproduce the observed population-level association between income inequality and mortality is then an empirical test of the statistical artifact hypothesis.

METHOD

The argument that the association between income inequality and mortality is artifactual depends on bringing together information at two levels. One is the level of individuals, the other is that of populations such as US states.

The first step is to derive a reliable individual-level relation between income and risk of mortality. This generic relation was estimated for the US population by using the national longitudinal mortality study.[10] This data set matched files containing household income and other demographic information from the US Census Bureau's current population survey to the National Death Index to provide about 7.6 million person-years of mortality exposure from 10 years of follow up.

The downward sloping curves (close together) in figure 1 show the results: the estimated relation between household income and the relative risk of mortality, plus a 95% confidence interval, after age and sex were controlled for. The relation is highly significant both statistically and substantively and is clearly consistent with a diminishing returns individual-level relation between income and risk of mortality. (Although we assumed logarithmic specification, other analyses determined that this was a reasonable functional form.)

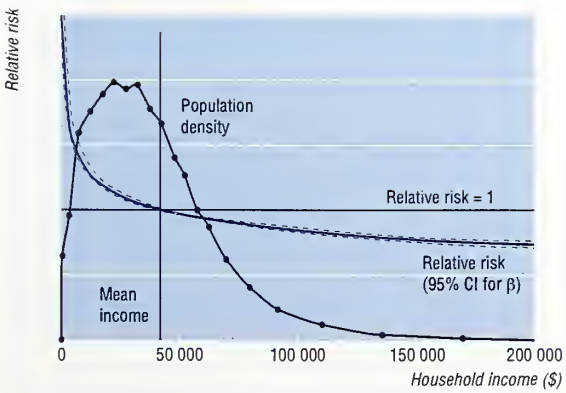

Figure 1 Relative risk of dying and population distribution in the United States for individuals by household income ($)

The remaining steps in the analysis complement this individual-level relation with consistent population-level data from the 1990 census on income inequality and mortality for each of the 50 states plus Washington, DC. Special Census Bureau tabulations provided counts of the numbers of individuals living in households by state, sex, detailed age groupings, and detailed income ranges. The other "humped" curve in figure 1 shows the resulting distribution of individuals by household income for the whole of the United States. Finally, 3 years of mortality data by state, sex, and age, centered on 1990, were downloaded from the Centers for Disease Control and Prevention Wonder site (http://wonder.cdc.gov/).

Given these data, a series of hypothetical standardized mortality rates specific for states was constructed. For each state, the generic relation between individual-level income and risk of mortality, shown by the income-mortality curve in figure 1, was applied to the actual income distribution within the state. In other words, a set of expected relative risks of mortality was calculated for each detailed age-sex-income-state category. These relative risks were next averaged over income groups, within each age-sex-state group, taking account of the number of individuals in each income interval (within age-sex-state groups). The result is a set of relative risks of dying as if the only reason for differences between states in risks of mortality were differences in income inequality between states (that is, differences in the composition of each state's population by income group).

We then multiplied these relative risks by the corresponding national mortality rates (specific for age-sex) and then standardized the rates by age-sex to the overall population. The result is a set of hypothetical state-specific mortality rates for which the only reason a state's mortality experience should differ from the national pattern is that its population has a different income distribution. These hypothetical mortalities are thus, by construction, exactly those we should observe if Gravelle's artifact hypothesis were 100% correct.

RESULTS

Some of the main results are shown in figure 2 for mortality in infants and working age men (that is, those age 25 to 59). Mortality is on the y axis and income inequality,

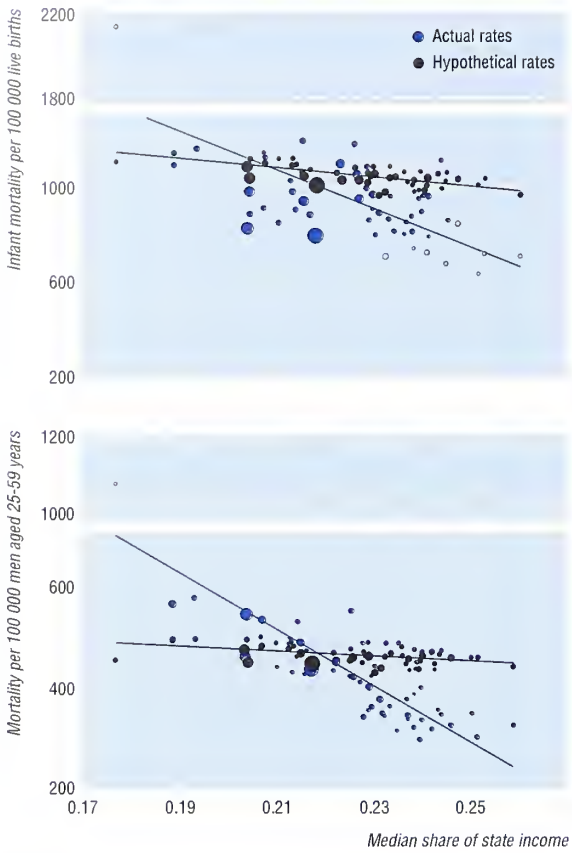

Figure 2 Actual and hypothetical mortality for infants and working age men by income inequality. Lines are ordinary least squares regression fits through the actual and hypothetical data points

measured by the proportion of total household income accruing to the bottom half of the population (the "median share"), along the x axis. Each point in these scatter plots represents one of the 50 states plus Washington, DC, with the area of each circle proportional to the state's population.

DISCUSSION

The pattern of mortality generated from a literal application of Gravelle's artifact hypothesis provides a poor fit with the observed data in the United States. If the observed association between state-level standardized mortality and income inequality were completely artifactual then the two scatters of points (actual and hypothetical) would be on top of one another and the two regression lines would be superimposed. This is clearly not the case. Mortality based on the artifact hypothesis shows some slope in the expected direction: a higher share of income accruing to the bottom half of the population (indicating lower inequality) is associated with lower mortality. But these slopes are considerably less than the slopes of actual mortality in relation to income inequality.

The observed associations in the United States at the state level between income inequality and mortality therefore cannot be entirely, or even substantially, explained as the statistical artifacts of an underlying individual-level relation between income and risk of mortality. There remains an important association between state-level income inequality and mortality, over and above anything that could be accounted for by statistical artifact.

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COMMENTARY

Income inequalities and health disparities

Socially based disparities in health status continue to plague even the most egalitarian societies despite public policies that aim to reduce or eliminate them.[1-4] In the United States, researchers have been preoccupied with the overwhelming health disparities, such as those mortality rates and chronic disease prevalence, that are related to race and ethnicity. But in other developed countries, public health researchers have focused on health disparities as they are related to inequalities in the distribution of income.[1,2]

Epidemiologists have long known that poverty is associated with higher rates of morbidity and mortality. In addition, a growing body of research has found a positive association between mortality and the extent of inequalities in income in a particular society.[3,4] But is this observed relation simply a statistical artifact caused by the adverse effects of poverty on an individual's health status and by the larger proportion of poor people that exists in societies with large inequalities in income? Or is the observed relation also due to some separate effect of living in a very unequal society. This subtle distinction is analogous to the questions that are often asked about the observed health disparities between black and white Americans: how much of the disparity is related to the fact that more black Americans live in poverty and how much is caused by the effects of racial discrimination and other aspects of racism?

Wolfson and colleagues present evidence that the observed relation between mortality in a state and inequalities in income in that state is not a statistical artifact. They found that differences in mortality among states were not accounted for simply by the different proportions of residents with lower incomes living in each state. Even after accounting for the individual-level relation between mortality and income, they found that mortality was associated with the extent of the inequality itself.

This issue has important public policy implications. To what extent can these inequalities be addressed by increasing individual opportunity through, perhaps, enhancing educational opportunities or providing income support? If the relation between inequalities in income and health were simply a statistical artifact, policymakers could focus on transferring sufficient income from more affluent people to those with the lowest incomes to raise their standard of living to a level that eliminates this hazard. If, however, the existence of inequalities in income has an adverse effect on health independent of the effects of poverty, then public policies should involve a more complete and fundamental redistribution of income: these policies should seek to equalize incomes to the maximum extent possible.

The study by Wolfson and colleagues provides some support for those who argue for highly redistributive policies. From the vantage point in the United States, with its growing inequalities in income, even policies that are more modest but are designed to reduce poverty would be a welcome public health intervention. These are important issues for researchers in all countries.

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None declared

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NETPHILES

Babies in pain Assessment of neonatal pain is difficult, yet its control is important because, untreated, it has both short term and long term negative effects. A quick search on Google (www.google.com) brings up the impressive KidsHealth.org ("Our mission is to provide the best children's health information on the World Wide Web"), which scores well on being explicit about its sources, with a large editorial team of doctors. The information on pain is of reasonable quality (kidshealth.org/parent/healthy/pain.html), but there are the usual problems: the general discussion cannot specifically address the question that directs the browser to the site, nor does it link to further sources of information. Bridging the gap between consumer and medical information is *www1.mosby.com/Mosby/Wong/hcom_wong_w43.html,* which offers among other things, practical instructions for making a sucrose solution—1 tsp of sucrose in 4 T of water makes a 24% solution. At Islamic Voice (*www.islamicvoice.com/june.98/science.htm#Top*) there's a reminder that the prophet has long recommended placing a date in the mouth of male infants about to be circumcised. At the other end of the spectrum, just about as specialized as it is possible to be, is the Pediatric Pain Letter at *is.dal.ca/~pedpain/pplet_toc.htm#toc.*

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Research Digest

Slow-release morphine was not more effective than methadone in reducing neonatal abstinence syndrome

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Addiction 1999;94:231-239.

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QUESTION

In pregnant women who are opioid dependent or polysubstance abusers, is slow-release morphine with an intermediate half-life (16 hours) more effective than methadone in reducing the neonatal abstinence syndrome in their newborn infants?

DESIGN

A randomized, unblinded, controlled trial with a mean follow-up of 15 weeks (follow-up information supplied by author).

SETTING

A drug addiction outpatient clinic at a university hospital in Vienna, Austria.

PARTICIPANTS

A total of 48 pregnant women (mean age, 26 years; mean gestation, 22 weeks) who were dependent on opioids or abused polysubstances (mean duration, 61 months) were willing to follow the maintenance program and to avoid using illegal drugs. Follow-up was complete.

INTERVENTION

Women were allocated to receive oral slow-release morphine tablets twice a day (n=24) or an oral methadone solution once a day (n=24). A flexible-dose regimen was used, and the mean dose at delivery was 53 mg for methadone and 300 mg for slow-release morphine. All women received psychosocial counseling twice a week and group psychotherapy once a week.

MAIN OUTCOME MEASURES

Neonatal abstinence syndrome was assessed every 6 hours using the Finnegan score. Other outcomes were illegal drug consumption (assessed by urinalysis and new injection sites), nicotine dependence (Fagerström questionnaire), and fetal distress.

MAIN RESULTS AND CONCLUSIONS

Neonatal infants born to mothers in the group receiving methadone and the group receiving slow-release morphine did not differ in the duration of the neonatal abstinence syndrome (16 days in the methadone group vs 21 days in the slow-release morphine group; P=0.18). The women's mean daily dose of slow-release morphine or methadone was not associated with the duration of neonatal abstinence syndrome (r=0.53, and P=0.20 for methadone; r=0.39, and P=0.34 for slow-release morphine). More women in the methadone group than in the slow-release morphine group used additional opiates (P<0.05) (table) and benzodiazepines (P<0.05). Nicotine dependence at delivery decreased from baseline levels in both groups (mean score difference, 11.7 (P=0.02) for methadone, and 16.1 (P=0.02) for slow-release morphine). All women, except 1 who had amniotic rupture, were delivered of their infant during the last trimester (mean gestation, 38 weeks). All neonates were healthy. In pregnant women who were dependent on opiates or who abused polysubstances, slow-release morphine of intermediate-length half-life did not reduce the neonatal abstinence syndrome more than methadone did. Women who received slow-release morphine used fewer additional opiates and benzodiazepines than women who received methadone.

Slow release morphine (SRM) vs methadone in pregnant women who were opiate dependent

Outcome	SRM	Methadone	RRR (95% CI)	NNT (CI)
Used additional opiates	21%	50%	58% (6-83)	4 (2-54)

RRR = relative risk reduction; NNT = number needed to treat. RRR, NNT, and CI calculated from data in article. Mean follow-up was 15 weeks (information supplied by author).

Commentary

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A recent survey in the United States showed that 5% of pregnant women used illegal drugs.[1] Despite the gravity of the problem, few empiric data exist to guide clinical management. A woman may be eager to stop drug use for fear that it will damage her unborn baby. On the other hand, the fetus is as dependent as the mother on heroin. Because the immature fetal nervous system is particularly sensitive to drug withdrawal, maintaining the fetus and mother at a stable level of opiates is preferable to in utero detoxification. Opioid maintenance treatment during pregnancy, however, only postpones the withdrawal reaction. After delivery, the neonate is still at risk of the abstinence syndrome.

We need a method that detoxifies pregnant women without causing substantial distress to the fetuses. Alternatively, we may search for an opiate that causes fewer or milder episodes of neonatal abstinence syndrome than methadone, which is currently the most commonly prescribed opiate substitute for pregnant women.

Fischer and colleagues have taken the second approach but found that slow-release morphine of intermediate-length half-life (16 hours) was not better than methadone in reducing the duration and severity of neonatal abstinence syndrome. These results are, perhaps, not surprising, given that the morphine preparation chosen has a shorter half-life than methadone (about 24 hours). Nevertheless, this study shows that slow-release morphine is superior to methadone in reducing harm. The next logical step would be to test whether slow-release morphine preparations of a long half-life are better than methadone for reducing neonatal abstinence syndrome while maintaining superiority in harm reduction.

1 Westat Inc. *National pregnancy and health survey: drug use among women delivering livebirths, 1992.* Rockville (MD): National Institute of Drug Abuse; 1996.

Brief physician advice reduced drinking in older adults

QUESTION

In older adults with potentially excessive drinking, does brief physician advice reduce alcohol use?

DESIGN

Randomized, single-blind (patient), controlled trial with 12 months of follow up.

SETTING

24 primary care practices in Wisconsin.

PATIENTS

A total of 158 patients who were ≥65 years old (66% men) and consumed >11 drinks/week (>132 g of alcohol) (>8 drinks/week for women), had ≥2 positive responses to the CAGE questionnaire, or had ≥4 drinks on each occasion ≥2 times in the previous 3 months (≥3 drinks for women). Exclusion criteria were attendance at an alcohol treatment program or reported symptoms of alcohol withdrawal in the previous year, physician advice to reduce alcohol use in the previous 3 months, drinking >50 drinks/week, or thoughts of suicide. Physicians (43 family physicians and internists) and patients received financial incentives for participating. Altogether, 92.4% of patients completed follow up.

INTERVENTION

Patients were allocated to a brief intervention group (n=87) or a control group (n=71). Participants in both groups received a general health booklet and follow up at 3, 6, and 12 months. Patients in the intervention group also received a workbook from their physician with feedback on health behavior, the prevalence of problem drinking, drinking cues, and a drinking agreement. The two intervention visits occurred 1 month apart with a follow-up telephone call 2 weeks after each visit.

MAIN OUTCOME MEASURE

Change in alcohol use.

MAIN RESULTS AND CONCLUSION

Intervention group patients had a greater decrease in alcohol consumption than did control group patients. During the 12-month follow up, intervention group patients had fewer mean drinks/week (P<0.001), fewer episodes of binge drinking (>4 drinks/occasion in men [>3 in women]) (P<0.025), and fewer episodes of excessive drinking (>20 drinks/week in men [>13 in women]) (P < 0.005) (table). Binge and excessive drinking increased in patients in the control group. In older adults, brief advice from their primary care physicians reduced excessive and binge drinking.

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Commentary

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Most studies support the idea of the "J-shaped curve" in which moderate consumption of alcohol reduces mortality because of the reduction in some forms of cardiovascular disease.[1] This effect is seen in people >50 years of age and means that reductions in moderately heavy drinking towards "safe" levels may have disproportionate health gains in this group.

The study by Fleming et al targets an appropriate group of people. All are well over 50 years of age and the selection criteria require that they are all drinking "not much too much". In this sample, the least severely affected are drinking within "safe" limits, and many of them will be the "pre-problem drinkers" who we should be targeting. The sample is heterogeneous, which is an advantage because it covers most types of potentially harmful drinking.

The intervention is simple, brief, and translatable to the "real world". The results at 1 year are worthwhile. The control group shows that general health advice does not translate into changes in drinking behavior and specific advice is necessary. Furthermore, in the control group some evidence showed that "untreated" problem drinking worsened.

This study should encourage primary care workers and community mental health workers to make screening for alcohol use and brief intervention part of the normal package of care.

1 Chou SP, Grant BF, Dawson DA. Medical consequences of alcohol consumption—United States, 1992. *Alcohol Clin Exp Res* 1996;20:1423-1429.

Table

Brief intervention vs control for potentially excessive drinking in older adults*

Outcomes at 12 months	Baseline Intervention	Baseline Control	Mean difference (95% CI)	
Number of drinks in previous 7 days	9.9 (15.5)	16.3 (16.6)	6.4 (3.2 to 9.6)	
			Relative risk reduction (CI)	**Number needed to treat (CI)**
Binge drinking in previous 30 days	31% (49%)	49% (40%)	38% (6.2 to 59)	6 (3 to 40)
Excessive drinking in previous 7 days	15% (29%)	34% (30%)	55% (18 to 76)	6 (3 to 20)

*Mean difference, relative risk reduction, number needed to treat, and confidence interval calculated from data in article.

Exercise training for patients with chronic heart failure reduced mortality and cardiac events and improved quality of life

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QUESTION

In patients with chronic heart failure, can long-term exercise training reduce all-cause mortality and cardiac events and improve quality of life?

DESIGN

A randomized, unblinded, controlled trial with a mean follow-up of 3.4 years.

SETTING

A cardiology institute and hospital in Italy.

PATIENTS

A total of 110 patients with stable chronic heart failure were screened, and 99 (mean age, 55 years; 88% men) were studied. Other inclusion criteria were left ventricular ejection fraction of ≤40 and sinus rhythm. Exclusion criteria were unstable angina, recent acute myocardial infarction, decompensated congestive heart failure, hemodynamically important valvular heart disease, severe chronic pulmonary illness, uncontrolled hypertension, renal insufficiency, or orthopedic or neurologic limitations. Follow-up was 95%.

INTERVENTION

Fifty patients were allocated to exercise training. During the 8-week start-up period, exercise training was done three times a week at 60% of peak oxygen consumption per unit time. For the next 12 months, patients exercised twice a week at the same intensity. The 1-hour sessions were supervised by a cardiologist and included stretching exercises and cycling on an electronically braked cycle ergometer. Forty-nine patients in the control group received no exercise training.

MAIN OUTCOME MEASURES

Mortality, cardiac events (chronic heart failure requiring hospital admission or medication changes, myocardial infarction, unstable angina, or cardiac death), and quality of life (Minnesota Living with Heart Failure questionnaire).

MAIN RESULTS

Analysis was by intention to treat. Patients in the exercise training group had fewer deaths (all deaths were cardiac deaths) (P=0.01); fewer hospitalizations for chronic heart failure (P=0.02); fewer cardiac events (P=0.006) (table); increased peak oxygen consumption per unit time (P<0.001) and thallium uptake (P<0.001); and improved qualify of life at 2, 14, and 26 months. The groups did not differ for unstable angina or acute myocardial infarction.

CONCLUSION

Exercise training for patients with chronic heart failure reduced mortality, hospital admissions for heart failure, and cardiac events and improved quality of life.

Exercise training vs no training for chronic heart failure (CHF)

Outcomes at 26 months	Exercise	No exercise	RRR (95% CI)	NNT (CI)
Death	18.0%	40.8%	55.9% (15 to 78)	5 (3 to 21)
All cardiac events	34.0%	75.5%	55.0% (33 to 71)	3 (2 to 5)
Hospitalization for CHF	10.0%	28.6%	65.0% (15 to 86)	6 (3 to 32)

RRR = relative risk reduction; NNT = number needed to treat. RRR, NNT, and CI calculated from data in article.

Commentary

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Patients with chronic heart failure commonly present with symptoms of dyspnea and fatigue associated with decreased exercise tolerance. Small randomized trials of short duration evaluating the role of exercise training in chronic heart failure have shown improvements in quality of life and functional capacity.[1,2] These improvements in functional capacity are associated with changes in skeletal muscle structure, function, and blood flow and with decreases in resting neurohormonal activation.[1,2]

The exercise training study by Belardinelli and colleagues is one of the largest and longest studies of patients with chronic heart failure. Compliance and follow-up were excellent, most likely because the study was hospital-based and included younger patients with symptoms of mild to moderate chronic heart failure. Improvements in functional capacity and quality of life corroborated the results of other smaller studies.

Although this study is the first to report decreased cardiac events in patients with chronic heart failure enrolled in an exercise training program, these results should be interpreted with caution because of the small sample size. The study is important because it shows the safety of exercise training in patients with chronic heart failure and provides evidence of an improvement in exercise performance in a hospital-based program. Larger studies to properly assess the effect of exercise training in chronic heart failure on mortality and morbidity are needed to confirm these promising results.

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Best Practice

TOPICS IN REVIEW

Cost-effective evaluation of acute viral hepatitis

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The performance of extensive serologic testing of patients who present to a primary care physician or to a hospital emergency department with possible acute viral hepatitis is not cost-effective (table). A selective serologic investigation is the most prudent approach to the diagnostic workup of this disease. We review two cases of patients with possible acute viral hepatitis to demonstrate the extra cost resulting from extensive serologic testing. In the following discussion, we review the epidemiologic features, demographics, and risk factors for the disease. We also propose a schematic, cost-effective approach to investigate whether acute viral hepatitis is present. The recommendations in this article were formulated after reviewing epidemiologic data from the Centers for Disease Control and Prevention.[1] A MEDLINE search was also conducted, and recent articles on this topic were reviewed.

REPORT OF CASES

Patient 1

A 19-year-old man had progressive anorexia and malaise, preceded by fever, for 1 week. Jaundice developed 1 day before he was seen by his physician. These symptoms developed eight days after he returned from a trip to Mexico. He denied injection drug use and was not sexually active. He was not taking any medications.

A complete laboratory evaluation revealed the following liver function test results: alanine aminotransferase, 1,200 U/L; aspartate aminotransferase, 900 U/L; total bilirubin, 77 µmol/L (4.5 mg/dL); albumin, 43 g/L (4.3 g/dL); and international normalized ratio, 1.1. Hepatitis B virus (HBV) and hepatitis C virus (HCV) serologic test results were negative for hepatitis B surface antigen (HBsAg); hepatitis B e antigen (HBeAg); and antibodies to hepatitis B core antigen of immunoglobulin M type (anti-HBc IgM), hepatitis B e antigen (anti-HBe), hepatitis B surface antigen (anti-HBs), and HCV (anti-HCV). A finding of total and IgM antibodies to hepatitis A virus (anti-HAV) confirmed the diagnosis of acute hepatitis A.

Patient 2

A 54-year-old man had the sudden onset of fatigue and jaundice. He reported having multiple sexual partners. A complete evaluation revealed the following laboratory test values: alanine aminotransferase, 832 U/L; aspartate aminotransferase, 622 U/L; total bilirubin, 67 µmol/L (3.9 mg/dL); albumin, 40 g/L (4.0 g/dL); and international normalized ratio, 1.0. Serologic test results were positive for HBsAg, HBeAg, and anti-HBc IgM; they were negative for anti-HBe and anti-HBs. Serum HBV DNA was detectable at a titer of 22.6×10^6 Eq/mL (normal, $<0.7\times10^6$ Eq/mL. These results were consistent with acute and active viral hepatitis type B. Test results that were positive for total anti-HAV and negative for IgM anti-HAV were compatible with previous, recovered hepatitis A and excluded acute viral hepatitis type A. Antibodies to HCV were not found. Laboratory data available from 1 year ago showed normal results of liver chemistry tests.

COMMENTS

The patients in both cases had a full complement of serologic tests, and patient 2 in addition had virologic tests. The epidemiologic history of these two patients might have directed a more selective use of serologic tests. In the following discussion, we identify risk factors that are useful for a selective serologic evaluation for acute viral hepatitis. The knowledge of the demographics and risk factors for acute viral hepatitis can prevent the unnecessary extra cost incurred by comprehensive serologic testing (Table).

EPIDEMIOLOGY AND DEMOGRAPHICS OF ACUTE VIRAL HEPATITIS

Viral hepatitis is a major global public health concern. It is a source of substantial morbidity and mortality, both in the United States and around the world. According to data from the Centers for Disease Control and Prevention,[1] 200,000 to 700,000 new cases of acute viral hepatitis occur in the United States each year. Of these, 32%

Table *Charges for serologic and virologic tests used in the diagnosis of viral hepatitis*

Test	Stanford University Medical Center Charge*
Hepatitis A	
IgM antibody to hepatitis A virus (IgM anti-HAV)	42
Hepatitis B	
Hepatitis B surface antigen (HBsAg)	30
IgM antibody to hepatitis B core antigen (IgM anti-HBc)	61
Hepatitis B e antigen (HBeAg)	20
Antibody to HBsAg (anti-HBs)	30
Antibody to HBeAg (anti-HBe)	20
Hepatitis B virus DNA (HBV DNA)	150
Hepatitis C	
Antibody to hepatitis C virus (anti-HCV)	
Enzyme-linked immunosorbent assay (ELISA)-2	39
Recombinant immunoblot assay (RIBA)-2	113
HCV RNA	150

*Stanford University Medical Center, Palo Alto, CA, clinical laboratory billing rates, given in 1998-1999 US dollars.

Summary points

- About 100 deaths occur in the United States each year from fulminant hepatitis A and 150 deaths from fulminant hepatitis B; hepatitis C has rarely been implicated as a cause of fulminant hepatic failure
- In 5% of adult patients with HBV infection and 85% with HCV infection, the disease becomes chronic, and in a significant percentage of these patients, cirrhosis and/or hepatocellular carcinoma will develop in two or more decades
- The presence of IgM anti-HAV in serum specimens collected during the acute or convalescent period of disease confirms a diagnosis of acute hepatitis A
- The detection of HBsAg in serum specimens of a patient with acute hepatitis strongly suggests that HBV is the cause. However, confirmation by a test showing IgM anti-HBc is required because a carrier of the HBsAg may present with a non-B type of acute hepatitis.
- Because 75% of acute viral hepatitis results from infection from either HAV or HBV, the initial laboratory investigation should include serologic tests to exclude HAV or HBV.
- Serum HCV RNA can be detected 1 to 2 weeks after the onset of infection, whereas elevated serum alanine aminotransferase levels are usually noted 4 to 6 weeks later. Antibodies to various HCV antigens can be detected, on average, 8 to 10 weeks following infection with HCV.

are caused by HAV, 43% by HBV, 21% by HCV, and 4% are classified as hepatitis type non-A, B, C, D, and E. In 1995, the new cases of acute viral hepatitis included 180,000 HAV infections, 128,000 HBV infections, and 28,000 HCV infections. From these cases, about 100 persons per year die of fulminant hepatitis A and 150 die of fulminant hepatitis B; hepatitis C has rarely been implicated as a cause of fulminant hepatic failure. Although the death rate from acute viral hepatitis is low, 5% of adult patients with hepatitis B and 85% of those with hepatitis C have chronic infection, and in a substantial percentage of these patients, cirrhosis and/or hepatocellular carcinoma will develop within two or more decades.

ETIOLOGY AND RISK FACTORS OF ACUTE VIRAL HEPATITIS

The severity of illness associated with acute hepatitis A increases with age, particularly in persons aged 40 to 50 years and older.[2,3] Children younger than 2 years rarely have jaundice or other signs of acute illness. However, nearly 70% of infected adults have clinical symptoms or jaundice.[2] Hepatitis A infection may also be more severe in patients with underlying chronic liver disease of various causes.[4] Fulminant viral hepatitis type A inherently carries a high mortality and is more common in persons older than 50 years and younger than 5 years, according to data of the Centers for Disease Control and Prevention.[2] In at least half of cases, the source of HAV infection is unknown. Other risk factors associated with HAV infection are interpersonal contact (22%-26%), day-care centers (14%-16%), international travel (4%-6%), food/waterborne disease outbreaks (2%-3%), and injection drug use (<2%).[1] For hepatitis A, some type of fecal-oral transmission is almost always involved because there is no carrier state and the virus is present in much higher titers in stool than in blood.

The HBV is a DNA virus composed of three viral antigens that induce the production of three separate antibodies. For viral hepatitis type B, transmission occurs through sexual contact—33% from heterosexual contact with persons with acute viral hepatitis or who are chronic carriers, and 16% from homosexual activity—or other exchange of body fluids (for example, 17% of cases occur through injection drug use; 2% to 3% through household contacts; and <1% through health care employment). Infectious virus can persist in dried blood on surfaces. Apparent acute hepatitis can develop in patients with chronic hepatitis B as their immune system eliminates the virus. In about 95% of adults, the acute infection resolves, with chronic hepatitis developing in only 5% of patients.

The HCV is a single-stranded RNA virus. The isolation and cloning of the HCV genome in 1989 was the first step in the development of serologic tests for the diagnosis of infection by this virus. The relative proportion of acute viral hepatitis caused by HCV is 21%.[1] The risk factors associated with the acquisition of hepatitis C are injection drug use (26%), multiple sexual partners (6%) interpersonal contact (5%), blood transfusion (5%), and health care employment and hemodialysis (1% each); 56% of cases have an unknown cause. It is known that HCV RNA is found in high titers in blood but in only low copy numbers (less than 1000 copies per milliliter) in specimens of saliva, breast milk, semen, and other body fluids. Given that only about 1 copy in 10,000 is associated with an infectious viral particle, it would require exposure to multiple milliliters of a body fluid to result in infection. Sexual transmission can occur, but the risk of transmission between monogamous partners is probably less than 1% per year. Infection with HCV can also be contracted by using contaminated needles to make skin tattoos and from intranasal cocaine use.

DIAGNOSING ACUTE VIRAL HEPATITIS

In the past few decades, our understanding of the natural history of the hepatitis viruses has greatly expanded, leading to the development of serologic and virologic tests for the accurate diagnosis of acute and chronic viral hepatitis. The serologic and virologic assays are based on the measurement of viral antigens or antibodies in the serum and molecular diagnostic techniques for the detection of viral RNA or DNA.

Acute viral hepatitis type A

The presence of IgM anti-HAV in serum specimens collected during the acute or convalescent period of the disease confirms a diagnosis of acute viral hepatitis type A. In most patients, IgM anti-HAV levels subsequently decline slowly and become undetectable 3 to 6 months after the onset of infection. Infected persons also produce IgG anti-HAV during the convalescent phase. The level of IgG anti-HAV remains detectable in serum specimens for the life of a patient, and their presence protects against reinfection. Commercially available diagnostic tests to determine the presence of IgM anti-HAV and total (IgM and IgG) HAV antibody levels in serum are reliable, offering high specificity and sensitivity.

Acute viral hepatitis type B

The commercially available assays for HBV infection include those for HBsAg, anti-HBs, total or IgG anti-HBc, IgM anti-HBc, HBeAg, and anti-HBe. The HbsAg is detectable during acute and chronic hepatitis B, and its presence characterizes ongoing infection.[5] The HBeAg is found early in the disease, and its presence indicates a high level of viral replication with an increased likelihood of infectivity. It usually disappears a short time after the appearance of its antibodies. Persistence of HBeAg for more than 8 to 10 weeks after the onset of acute hepatitis is a predictor of chronic hepatitis B. Hepatitis B core antigen is the major product of the nucleocapsid gene and is not detectable in serum specimens by conventional techniques.

During convalescence from acute hepatitis B, anti-HBs appears and indicates recovery from the infection and the development of immunity.[6] They are also induced by successful HBV vaccination and generally protect against infection. Persons who receive the HBV vaccine do not develop anti-HBc. Antibodies to hepatitis B core antigen consist of IgM and IgG antibodies and appear at the onset of hepatitis B; IgM anti-HBc disappear with recovery from acute hepatitis, while total anti-HBc is present for decades. Thus, anti-HBc are detectable in both infected patients and patients who have recovered from HBV infection. This antibody must be fractionated to distinguish between acute and chronic HBV infection. This assay is therefore helpful in diagnosing acute nfection.[7]

The anti-HBe become detectable when HBeAg is lost in acute or chronic hepatitis B.[6] It is not uncommon for patients to have undetectable levels of this antibody. In patients with acute infection, the appearance of anti-HBe is correlated with the resolution of HBV infection and the absence of clinically significant liver disease. Exceptions to this general rule do occur, most strikingly in patients with reactivated chronic HBV infection and also with HBV mutants that lack the HBeAg. In both instances, severe liver disease may be seen in patients who have anti-HBe.

The detection of HBsAg in serum specimens from a patient with acute hepatitis strongly suggests that HBV is the cause. However, confirmation by a test showing the presence of IgM anti-HBc is required because a carrier of the HBsAg may present with a non-B type of acute hepatitis.[8] When reliable serologic markers are present, the use of polymerase chain reaction to detect HBV DNA for diagnosis and/or confirmation of acute HBV infection is not a cost-effective approach.[9]

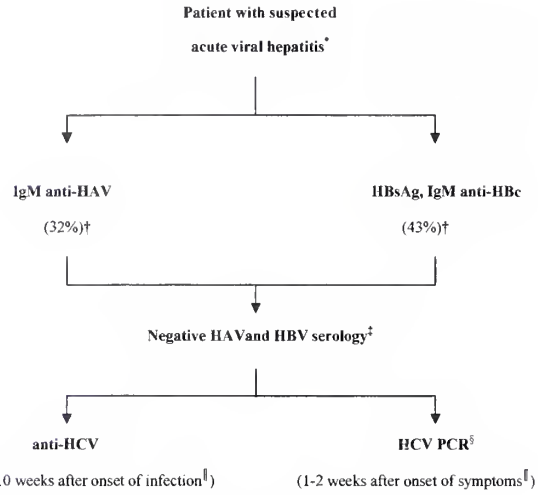
Acute viral hepatitis type C

Acute hepatitis C is usually asymptomatic and frequently subclinical.[1] Serum HCV RNA can be detected 1 to 2 weeks after the onset of infection, whereas elevated serum alanine aminotransferase levels are usually noted 4 to 6 weeks later.[10] Antibodies to various HCV antigens can be detected, on average, 8 to 10 weeks following infection with hepatitis C.

During the past eight years, progressively refined generations of assays for detecting HCV antibodies have become available.[11] The basic difference between the generations of these tests is the number of recombinant antigens included in the test. The enzyme-linked immunosorbent assay (ELISA) has been the mainstay screening test for anti-HCV. It is relatively inexpensive and has the additional advantages of technical simplicity and reproducibility. The currently available ELISA-2 may soon be replaced by a more sensitive third-generation test.[10] It is prudent to confirm a positive ELISA result for anti-HCV, particularly for low-risk persons, among whom the currently available ELISAs have a substantial false-positive rate. In the United States, the most commonly used supplemental assay is the recombinant immunoblot assay. Currently available tests have a sensitivity greater than 95% for chronic hepatitis C.[12] The test has poor sensitivity in organ transplant recipients and patients receiving renal dialysis.

COST-EFFECTIVE DIAGNOSIS OF ACUTE VIRAL HEPATITIS

A cost-effective diagnostic workup of patients with possible acute viral hepatitis is the most reasonable approach (figure).[13–15] This algorithm, however, is not applicable to patients who present with fulminant hepatic failure or who have had chronic viral hepatitis. Because 75% of cases of acute viral hepatitis result from infection with either HAV or HBV, the initial laboratory investigation should include serologic tests to exclude HAV or HBV. If the results of these studies are negative, further testing should be done to rule out acute HCV infection, which is less common. Serum HCV RNA is detectable 1 to 2 weeks after the onset of infection, whereas anti-HCV can be detected 8 to 10 weeks following infection with the virus.[10] In clinically stable patients, waiting and checking for



Algorithm for cost-effective laboratory evaluation of acute viral hepatitis

the presence of antibodies to HCV may be plausible. Checking for HCV RNA by polymerase chain reaction in all patients is not cost-effective, unless there is a known history of blood exposure. Finally, not all acute hepatitis is viral. If the initial evaluation fails to show viral hepatitis, then other causes of hepatitis, such as alcoholic hepatitis, drug toxicity, autoimmune hepatitis, or Wilson's disease, should be considered.

CONCLUSIONS

This algorithm provides a reasonable approach to the diagnosis of acute viral hepatitis and does not jeopardize patient management. It also prevents obtaining unnecessary and costly serologic tests in patients who may not have acute viral hepatitis.

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COMMENTARY

All patients with acute hepatitis must be observed until the acute liver injury resolves

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Ahmed and Keeffe point out that only a few basic viral diagnostic tests are indicated for the initial evaluation of patients presenting with acute hepatitis. This is in consideration that hepatitis A and B account for three fourths of cases of acute viral hepatitis in the United States. The presence of hepatitis A or B is sometimes heralded by arthralgias, nephritis, or urticaria, which can provide useful diagnostic clues.[1,2]

Hepatitis C should be considered in patients with a known blood exposure, but only a fraction of persons with hepatitis C have acute jaundice or other recognizable symptoms. Furthermore, when symptoms occur with acute hepatitis C, the development of hepatitis C antibodies is often delayed several weeks after the onset of symptoms. The use of viral diagnostic tests other than the basic tests for hepatitis A and B can be guided by epidemiologic risk factors.[3]

A large number of viruses and other infectious agents occasionally cause hepatitis, sometimes as part of a multisystem illness such as infectious mononucleosis or Hantavirus infection. Hepatitis E is a form of acute viral hepatitis found in the Indian subcontinent and occasionally in Latin America.[4] In a patient without a pertinent travel history or a history of immunosuppression, it is usually not useful to pursue these less common diagnoses.

Not all patients presenting with acute elevation of aminotransferase levels have viral hepatitis. Many other serious, treatable conditions can masquerade as viral hepatitis. A hepatic drug reaction can be lethal if the offending agent is not stopped. Acetaminophen can cause intentional or

unintentional hepatotoxicity, especially in persons with high alcohol consumption.[5] Ischemic liver injury can be caused by an abrupt decrease in cardiac output, especially when combined with hepatic venous congestion. This can occur unobserved when a patient with serious valvular or myocardial disease has arrhythmia during sleep. Acute obstruction of the common bile duct by a gallstone can cause the aminotransferase levels to rise for a day or two to more than 1,000 U/L. This can be especially confusing because the alkaline phosphatase level may take several days to rise, and imaging studies may not initially show bile duct dilatation. If the initial evaluation of a patient with greatly elevated aminotransferase levels is negative for viral hepatitis, then other less common causes of acute hepatitis, such as autoimmune hepatitis or Wilson disease,[6] should be considered.

If the initial clinical evaluation and a basic laboratory evaluation for hepatitis A and B do not reveal a diagnosis, then it may not be possible to reach one. Further laboratory evaluation may be guided by the clinical course. For any patient who appears ill with acute hepatitis, the prothrombin time should be measured, and an assessment should be done for hepatic encephalopathy. Regardless of the cause, any evidence of encephalopathy or a substantially prolonged prothrombin time should prompt hospital admission and close follow-up. Also, any patient with acute hepatitis, regardless of the cause, needs to be observed until the acute liver injury resolves.

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Lessons learned from and future expectations of complex emergencies

Where civil blood makes civil hands unclean
—Shakespeare, *Romeo and Juliet*, 1597

Complex emergencies today represent the ultimate pathway of state disruption. Zwi and Uglade say that recent conflicts such as those in northern Iraq, Somalia, Rwanda, Angola, the former Yugoslavia, and the province of Kosovo should be interpreted as complex political disasters in which "the capacity to sustain livelihood and life is threatened primarily by political factors, and in particular, by high levels of violence".[1] Although each of the over 38 major conflicts that have occurred in this decade since the end of the Cold War is unique, all share similar characteristics (box). The most blatant is that they represent catastrophic public health emergencies in which over 70% of the victims are civilians, primarily children and adolescents.

Summary points

- Complex emergencies represent the international response to state disruption and its sutaining infrastructure
- Understanding of complex emergencies has arisen from the many post-Cold War conflicts of the 1990s, although complex emergencies can be catalyzed by natural and other disasters
- Complex emergencies need to be recognized for the public health disasters they are for the public health expertise required by civil and military authorities

These mainly internal crises are popularly referred to as complex emergencies. The complexity refers to the multifaceted responses initiated by the international community and further complicated by the lack of protection normally afforded by international treaties, covenants, and the United Nations Charter during conventional wars.

Health resources, both civilian (those provided by United Nations agencies, the International Federation of Red Cross and Red Crescent Societies, and many nongovernmental organizations) and military, have played an important part in the emergency response, recovery, and rehabilitation phases of complex emergencies. In the process, health providers have made major advances in assessment, management, education, training, and research,[2-5] and they remain among the few existing political consciences still available to advocate for vulnerable populations worldwide. To be both successful and safe in complex emergencies, health providers need to expand their knowledge base to include issues of integrated management, transportation, logistics, communication, negotiation and mediation, security, and international humanitarian law.

Complex emergencies will continue to threaten the

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Characteristics of complex emergencies

- Administrative, economic, and political and social decay and collapse
- High levels of violence
- Cultures, ethnic groups, religious groups at risk of extinction
- Catastrophic public health emergencies
- Vulnerable populations at greatest risk
- Primarily internal wars with major violations of the Geneva Conventions and Universal Declaration of Human Rights
- Increased competition for resources between groups in conflict
- Increased migration of refugees or internally displaced populations
- Long-lasting and widespread

health of nations. In this article I describe the various contributing factors, deficiencies, and needs most likely to precipitate future complex emergencies and outline the sorts of responses that will be needed to deal with them. This article draws on not only on research but also on analysis of the experience of international and non-governmental organizations in dealing with many of the complex emergencies of this decade.

FACTORS INFLUENCING FUTURE COMPLEX EMERGENCIES

Complex emergencies existed during the Cold War but responses were limited or non-existent, primarily because of vetoes on action in the UN Security Council.[6] They will probably continue as a post-Cold War phenomenon through the early part of the next decade, predominantly in Africa, Asia, and South and Central America. As existing governments collapse, militaries become increasingly supported by undisciplined paramilitaries, while insurgents and organized gangs and warlords gain power; the collapse is usually preceded by worsening corruption, criminalization of government, and suspension of the rule of law, such as in Russia and Zaire. In disrupted states (a term first used by H Smith in unpublished paper, 1999), hospitals and clinics are the first to be destroyed and the last to be rehabilitated.[7] Indigenous healthcare providers become refugees early, and those who remain, as in Rwanda and Kosovo, are often targeted or intimidated if they defend the rights of patients.

There are an average of 25 to 35 small-scale conflicts each year,[8] and they require cohesive sociopolitical and economic efforts to prevent them from developing into complex emergencies. By monitoring small-scale disasters we can define the "public health" capacity and capability in many countries by exposing the vulnerabilities and inequities that typically lead to conflict situations.

Major humanitarian emergencies caused by natural or technological disasters (35-60 per year and 15-25 per year, respectively)[8] used to be considered conceptually separate from complex emergencies. But in weakened and disrupted states a natural disaster such as flood, famine, or deforestation, or a major episode of industrial poisoning can expose the same vulnerabilities (box).

Political and legal factors

An emerging view is that a conflict related to ethnic issues is catalyzed in disrupted states by the need of ethnic groups to fall back on what is considered safe and familiar.[9-11] Territorial buffer zones that once separated ethnic groups disappear, causing increased competition for resources and migration of large populations, either as refugees who cross national boundaries or as internally displaced populations.

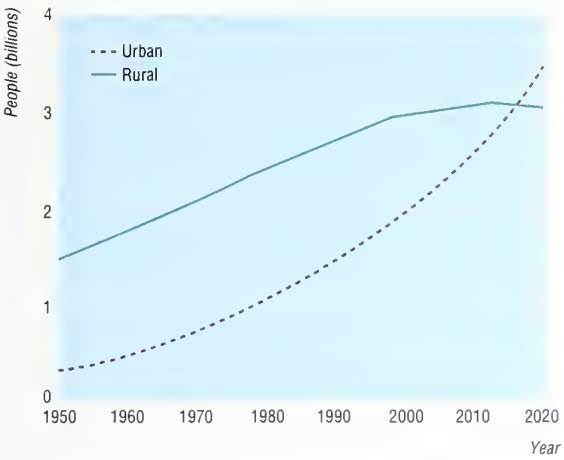
Ethnic-based "ancient animosities" have been savage when complex emergencies develop.[12] Of the more than 6000 cultures that entered this decade some have disappeared through natural assimilation alone. State disruption, however, has placed many minority cultures at risk of extinction. The rate of extinction is so alarming that, if it continues, fewer than 600 cultures will remain by the year 2005.[13] Also, the more removed the culture is from the developed world, the less interest and protection it generates.

Culturally defined customs, skills, and arts passed along to succeeding generations include the foundations of health and public health refinements that allow a people to survive. When a culture is lost, so too is the inextricably connected professional and institutional memory of public health measures. The mitigation that develops as a result of repairs to public infrastructure and rehabilitation projects alone is not enough. This raises the question of whether the loss of a culture, as a consequence of a complex emergency, should be addressed as a critical strategic, political, and security issue.

Membership in the UN's General Assembly requires states to adhere to the Universal Declaration of Human Rights. Once the declaration is violated, several UN chap-

Elements shared by all disasters in disrupted states

- Disasters expose major public health deficiencies
- Natural and technological disasters may catalyze a complex emergency
- Lack of proper resources to respond
- Lack of a security capacity
- Lack of a management capacity
- Politically favored populations do better



In the developing world urban populations will start to outnumber rural ones in less than 20 years (from the International Food Policy research Institute, based on United Nations data)

ters allow the Security Council to bypass the sovereignty of the state where rights are being violated, in favor of non-permissive humanitarian intervention. Under international treaty, once a discrete complex emergency is legally defined as genocide, a sanctioned external force must enter the conflict and stop the slaughter. Political failure to do so (as in Rwanda and Cambodia) has caused a widening gap between claims of protection and actual outcome.

Solutions to the problems of disrupted states will require greater international political decisiveness to overcome legal constraints. A first step is to give internally displaced populations the same legal protection as refugees. Success will then be judged by a reduction of the exceedingly high mortality of internally displaced people and their vulnerable populations—for example, unaccompanied minors.

Socioeconomic factors

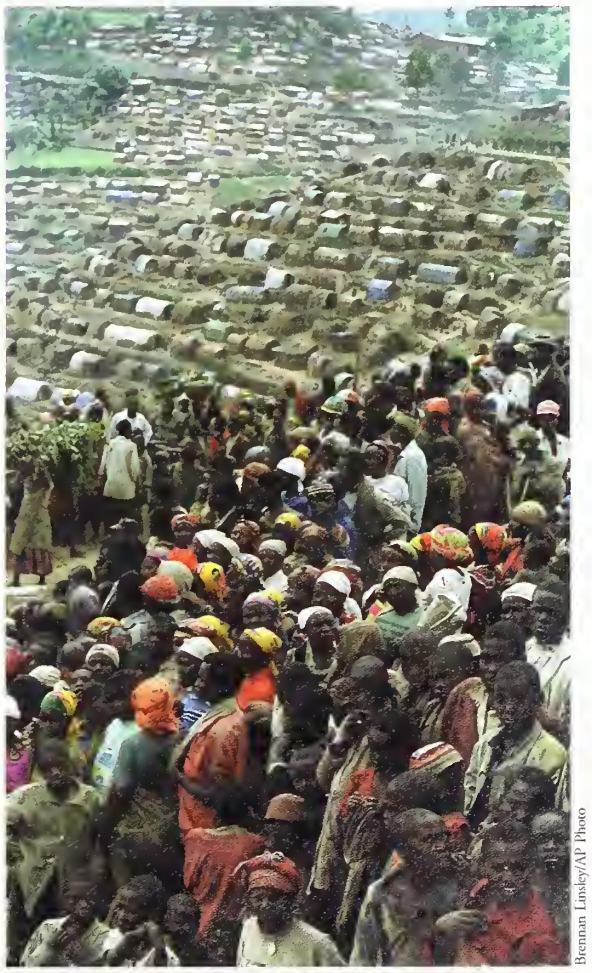
Population increases have always been a threat to social stability. It is not the increase itself but the changing patterns of population that have the greatest potential for contributing to conflict. Both have major health implications. Urban slums currently contain over half the poor people in the developing world, mostly women with children and inadequate support systems. The number of major cities with populations over 1 million are increasing, without a comparable growth in public health infrastructure such as sanitation, water supplies, and clinic services. Migration of populations for both environmental and economic reasons will dominate the next decade, especially in Asia, where resources per capita are the least.)

Early in the 2010s urban populations in the developing world will exceed rural ones for the first time in history (figure). The need for humanitarian assistance is already moving from rural to urban areas. However, critical issues such as the defense of urban public health infrastructure, sanitation, and access to water are not being addressed in existing education, training, and research and management forums.

Unfortunately, political and economic realities make some victims more deserving than others, suggesting that some weakened or disrupted states—those that are considered economically interdependent and geopolitically critical by developed governments—will be favored as recipients for humanitarian assistance and disaster relief. The future requires a transparent humanitarian architecture and a balance sheet of budgeted priorities as well as the coordination of donor agencies with an international mandate and monitoring. Health providers are uniquely qualified as lobbyists and advocates to diminish international fears of governmental self-interest, hypocrisy, and racism in determining humanitarian priorities.

Environmental security factors

Major environmental and ecological abuses occur from deforestation, the damming of waterways, human-



Brennan Linsley/AP Photo

Genocide displaced hundreds of thousands of Rwandans

generated flooding and loss of topsoil, pollution, and the consequences of nuclear and chemical hazards. Environmental security is aimed at preventing "serious political and social instability stemming from human activities which reduce the environment's capacity to sustain life".[14] The term encompasses many of the public health issues inherent in complex emergencies but does so on a larger scale with both national and regional ramifications. One can argue that there is a causal relation between the severe deforestation of the North Korean peninsula and environmental degradation, food and fuel scarcity, and smoldering conflict. Public identification of such environmental factors will cause governments to take action even though such action might lead to military involvement.

RESEARCH ISSUES

Initial responses in the field to complex emergencies were understandably ad hoc. No foundation of applied health research exists for complex emergencies as it does for natural and technological disasters or for conventional cross-border wars. Major challenges were quickly identified in organizational management, refugee care, triage of victims, water and sanitation, nutrition, communicable diseases, and psychosocial, gender, and reproductive issues. Victims in developing countries have high mortality and morbidity from violent trauma, epidemics, starvation, and severe psychosocial disabilities. These public health consequences of refugee displacement and overcrowding affect all age groups, particularly infants and children under 5.[15,16] Similar consequences are evident in the developed countries of Iraq, Yugoslavia, and Chechnya, where heightened trauma and the complications of undernourishment, dehydration, and untreated chronic diseases in infants and elderly people often dominate the clinical picture (R Brennan and BT Burkholder, unpublished data).

Ricardo Mazalan/AP Photo

The UN Mission for Somalia, 1996: an attempt to restore order to a country plunged into chaos after a coup

The World Health Organization and the Macfarlane Burnet Center for Medical Research in Melbourne have begun to document studies that will build the foundation of research.[16] One effect is that the reports that first raised awareness of human rights and gender and reproductive issues are being transformed into operational programs. Human rights abuses are now documented and a response coordinated, with early psychosocial and legal counseling offered by advocacy organizations. Gender-specific health programs have benefited from early assessment tools and standardized management protocols.[17,18] Health providers must recognize that they often serve as part of a wider package of humanitarian aid and prevention and that this requires specialized education and training that supports protection, standardized documentation, and accountability for abuses.

Lack of information sharing among major players in complex emergencies, and failed or incompatible communications systems, are important paralyzing factors. Information technologies in Bosnia required high maintenance and placed a heavy burden on staff but did not contribute to the overall efficiency of field operations. There is promise in field-tested satellite telecommunications and image gathering, event monitoring and early warning database systems, and handheld computer links to organizational and research centers.[19] A major challenge for information technologies is not only to aid efficiency but to serve as a tool for fostering collaboration between conventional vertical organizations that are otherwise constrained in their communication and coordination with like organizations.

PUBLIC HEALTH RESPONSES

Since the 1991 crisis in northern Iraq all decision makers (civilian and military) have been required to manage the "public health". Failure to do so has been attributed partly to the inability of decision makers to consult and use public health consultants and advisers.[20] The events of this decade show that public health no longer refers only to health and medical care but also encompasses transportation, communication, the judiciary, public safety, and all those disruptions in complex emergencies that must be corrected before a village, town, city, or nation can function (box). This understanding will further encourage professionals to cross boundaries as required to perform integrated assessments and share information and will ensure the place of health professionals in the planning process. In current political-military implementation plans (for ex-

International operational response status of health-related programs

Operational and fully standardized programs:
Water
Sanitation
Nutrition
Communicable diseases
Essential drugs
Individual program assessments

Programs not fully standardized or institutionalized:
Reproductive health/women's issues
Human rights monitoring
Psychosocial or mental health
Codes of conduct
Education and training

Not operational or deficiencies exist:
Information technologies
Measures of effectiveness
Security
Information sharing
Civil-military collaboration
Coordinated logistics
Urban infrastructure
Urban humanitarian relief
Consequence management of nuclear, chemical, or biological events
Integrated assessments

ample, United States Presidential Decision Directive 56) normalization of health indicators is considered the major measure of effectiveness, yet health professionals, other than those who serve the forces themselves, are rarely considered in planning.

Lack of education and female illiteracy have traditionally topped the list of major factors contributing to overall child mortality and morbidity in the developing world. In this decade the moral integrity of governments and the presence of public health infrastructure (both absent in complex emergencies) have replaced these traditional public health indicators. This is especially true in some refugee camps where no education occurs, girls and women have no rights and receive less than their fair share of food and commodities, and male children are recruited into the military. Refugee camps are anomalies of society. Steps must be taken to prevent their growth, except in support of emergency and short-term humanitarian missions. The ability to prevent the establishment of long-term camps will be a major measure of effectiveness.[21]

Communicable diseases thrive in the overcrowded environment of camps, with unsanitary and disrupted infrastructures and the indiscriminate defecation of children. Initially, health programs in complex emergencies did not deal with tuberculosis in refugee camps. However, the prevalence in camps was found to be 4-6%, often with resistant forms and far beyond the alert rates for conventional communities. Dengue fever has emerged as a unique economic indicator of decaying urban infrastructure, prompting closer scrutiny by economists and public health authorities alike.[22] Fears of the transnational spread of communicable diseases from camps and countries with poor public health are among the leading concerns of the developed world. The public in the developed world expects that relief programs will not increase the risk to their lifestyles, so donors will in the future demand attention to prevention, containment, and eradication of infectious agents.

SECURITY ISSUES AND THE NEED FOR CIVIL-MILITARY RESPONSES

Wanton violations of the Geneva Conventions have included unprecedented and widespread rape; massacres; sniper targeting of children, adolescents, and pregnant women; attacks on therapeutic feeding centers; diversion of food by warring factions; and attacks on relief workers—40 Red Cross workers have been killed in the past five years. Peacekeeping forces have also experienced casualty rates statistically higher than if decisive force had been used.[23] These violations are too often relegated to minor news stories and have failed to achieve the level of international concern and debate they deserve. The success of humanitarian assistance will depend on the ability of

Factors contributing to future complex emergencies

Urbanization of global populations
Urban dominance of world's poor
Failing public health infrastructures
Lack of moral integrity of governments
Availability of weapons and access to weapons of mass destruction
Economic inequities and corruption
Undisciplined military, paramilitary, and police forces
Suspension of the rule of law
Wanton violations of protective treaties
Failures in environmental and ecological security
Food and water insecurity
Transmigration of populations due to conflict or political, economic, and environmental issues

international organizations to reinstate and enforce these basic protections.

Civil-military cooperation

The role of peacekeeping forces, under chapter 6 of the UN Charter, has been restricted by ambivalent mission statements and weak rules of engagement, making them ineffective in complex emergencies in the past—for example, UNPROFOR in the former Yugoslavia. Under chapter 7 of the UN Charter peace enforcement operations, such as those in Haiti and Kosovo, are charged with separating warring factions or quelling conflicts before a peace agreement is in place. The requirements for humanitarian assistance may be at their peak during this phase. Future expectations are that military and humanitarian relief organizations will train together as "field units" to provide relief and security to populations during times of active conflict and heightened risk.[24] Chapter 7 requires the coordination, monitoring, and enforcement of international humanitarian and human rights law, so health providers must understand that the role they play in documenting abuses under the law requires a degree of civil-military collaboration without compromise of an agency's autonomy.

In the future regional organizations will probably have more political clout, and regional peacekeeping battalions will develop under a more robust UN Standby Arrangements program. Unfortunately, previous work done to optimize civil-military coordination was compromised in the initial intervention in Kosovo, which was run by NATO. Political decisions made by NATO had the secondary effect of bypassing the humanitarian architecture that was already in place, specifically the UN Office of the Coordinator for Humanitarian Affairs and the early implementation of the UN High Commissioner for Refugees as the lead agency for humanitarian organizations.

Managing the consequences of nuclear, chemical, and biological events, whether accidental or caused by terrorists, is beyond the capabilities of most countries. Coordination of the management of consequences requires a joint process that marries governmental decision makers, tactical level scientists, trained relief workers, and the military to self-sufficient and tailored operational-level task forces. To date only a few non-governmental organizations have shown an interest in integrated education and training, and the international organizations' capabilities are lacking, especially in chemical and biological support.

CONCLUSIONS

The 1990s will be viewed as the decade of the emergence of the complex political disaster, but it is unlikely to be the end of them (box). Many people argue that the role of the international community and the effectiveness of humanitarian assistance have been seriously flawed. Even though health programs have matured greatly, with professionalization of providers, codes of conduct,[25] and research- and field-based education programs, health providers have been frustrated in meeting the challenge to save lives, only to find themselves sliding back again into crisis. Lessons gained through experience in recent complex emergencies will have ready application for future political trials and conflicts.

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Anti-vascular therapy: a new approach to cancer treatment

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The understanding that the growth of tumors is dependent on angiogenesis has led to the development of new approaches to treatment and new agents directed at tumor vasculature. These have yielded striking successes in experimental models, which if translated into the clinical setting will have a substantial effect on patient survival. Such new approaches are vital because, although great strides have occurred in the treatment of certain cancers, the overall, standardized mortality from most solid tumors has altered little over the past two decades.[1]

This article considers the process of tumor angiogenesis and discusses the potential of angiogenic inhibitors as therapeutic agents.

ROLE OF ANGIOGENESIS IN GROWTH OF TUMORS

The vascularity of tumors has been noted for many years.[2] Alguire noted that vascularization was instigated by the developing tumor: "An outstanding characteristic of the growing tumor is its capacity to elicit the production of a new capillary endothelium from the host."[3] Tannock elegantly showed that the rate of division of tumor cells decreased in proportion to their distance from the supplying blood vessel and related this to diminishing oxygen supply.[4] Moreover, he showed that the overall rate of growth was dictated not by the proliferation of tumor cells but by the lower rate of proliferation of endothelial cells, concluding that the supply of oxygen and nutrients to the tumor limited its growth.

Tumor vascularization is a vital process for the progression of a neoplasm from a small, localized tumor to an enlarging tumor with the ability to metastasize (figure).[5,6] Anti-angiogenesis as a therapeutic concept was developed in the early 1970s based on the observation that tumors that did not vascularize failed to grow beyond a few millimeters in diameter.[7] By comparing the growth of transplanted tumors in the avascular aqueous humor of a rabbit eye with those in the vascular iris, Folkman showed distinct avascular and vascular phases of tumor growth. The start of the vascular phase of growth coincided with tumors growing beyond 2-3 mm^3 and a 20-fold increase in the rate of tumor growth. Tumors in the aqueous humor were prevented from entering the vascular phase and remained dormant.[8] He concluded that vascularization was essential to tumor growth and inferred that preventing this process was a viable therapeutic approach.

Induction of angiogenesis by tumors

Adult endothelium is essentially quiescent, but in response to physiological or pathological stimuli (such as proliferating endometrium, injury, tumor growth or diabetic retinopathy) the endothelium can alter to a proliferating and organizing population of cells. Physiological angiogenesis can also be rapidly curtailed, indicating that the process is held in check physiologically and yet can be activated in response to the appropriate stimuli, somewhat analogous to the clotting cascade (see box).

A tumor induces this proliferative vascular response from host vessels by altering the balance of positive and negative regulators locally. This "angiogenic switch" is necessary for tumor growth and may be rate limiting.[9] Convincing evidence exists that tumors undergo a switch to an angiogenic character as they progress. In cervical carcinoma, the development of vascularity can be associated with progression from a non-invasive premalignant stage to invasive carcinoma.[10] The density of microvessels in tumors is a powerful, independent prognostic indicator of distant metastasis and survival, suggesting that tumor vascularization correlates with growth and metastatic potential.[11]

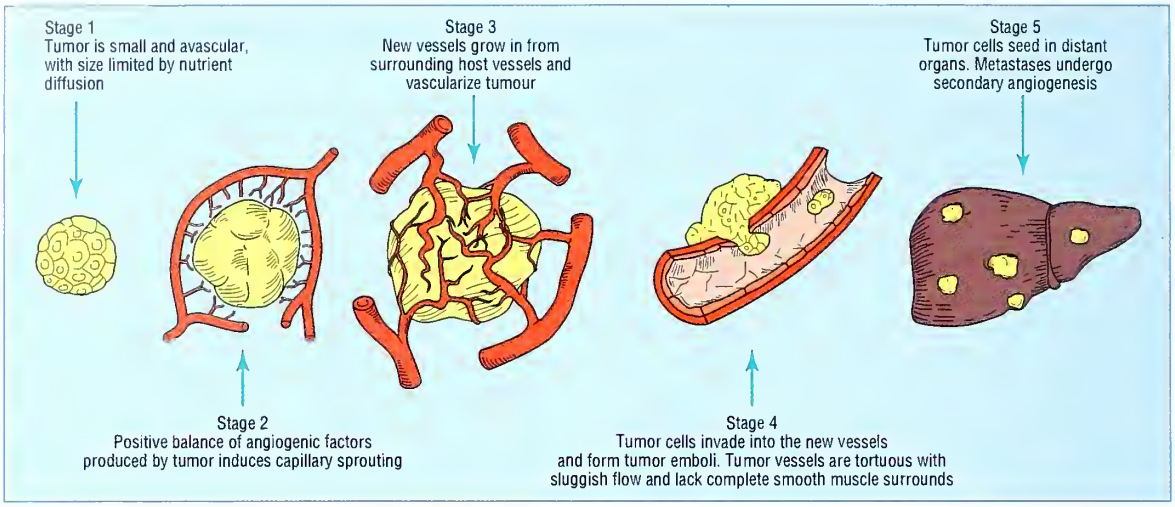
ANTI-VASCULAR TREATMENT

There are four key approaches to anti-vascular treatment (box). All depend on targeting endothelial cells rather than tumor cells for drug action, and destruction of the tumor cells is secondary. A theoretical advantage of these approaches is that endothelial cells are not transformed

Proteins that may regulate angiogenesis

Promoters
- Fibroblast growth factors
- Vascular endothelial growth factor
- Angiogenin
- Transforming growth factor α
- Pleiotrophin
- Scatter factor
- Thrombin
- Angiopoietin 1

Inhibitors
- Thrombospondin
- Angiostatin
- Endostatin
- Interferon α, β, γ
- 16 kDa prolactin fragment
- Platelet factor 4
- Angiopoietin 2



Role of angiogenesis in growth of tumors

and are unlikely to acquire mutations resulting in drug resistance.

Furthermore, treatment directed at endothelial cells is applicable to all solid tumors, irrespective of the origin of the tumor cells. Also, endothelial cells are uniquely exposed to blood-borne agents, circumventing the problem of delivering drugs to the center of a tumor, which is a major hurdle in conventional treatment.

Neutralizing angiogenic promoters

One of the favored approaches is to interfere with the balance of angiogenic proteins produced by a tumor—"turning off the switch". This has been made possible by an understanding of the mediators of angiogenesis in normal and pathological settings. Current evidence implicates vascular endothelial growth factor (VEGF) and the family of fibroblast growth factors (FGF 1-12) as critical regulators of physiological angiogenesis. Angiopoietins 1 and 2 have been implicated as the factors controlling the recruitment of supporting cells to the developing tubule.[12, 13]

Both vascular endothelial growth factor and fibroblast growth factors 1 and 2 have been implicated as important promoters of tumor angiogenesis. Vascular endothelial growth factor, a mitogen and permeability factor specific for endothelial cells, is up-regulated in many different tumor types and cell lines,[14-16] often in areas of tumor hypoxia.[17]

Fibroblast growth factor 2 is ubiquitous in the extracellular matrix bound in an inactive form, but in tumors the active factor is released either from the tumor or from the extracellular matrix by various mechanisms.[18] Increased serum and urine concentrations of fibroblast growth factor 2 can be detected in cancer patients.[19] Increasing the amounts of active fibroblast growth factors secreted by tumor cell lines, by transfecting DNA into cells, can markedly increase the ability of poorly tumorigenic cells to form tumors and to metastasize.[20]

Because there is evidence that vascular endothelial growth factor and fibroblast growth factor 2 are promoters of tumor angiogenesis, researchers have investigated ways of interfering with their angiogenic effects and have demonstrated the ability to induce tumor regression in mice. These approaches include targeting vascular endothelial growth factor with a monoclonal antibody[21] and preventing release of active fibroblast growth factor 2 from the extracellular matrix by eradicating a binding protein necessary for its release.[22] The problem with such approaches is that they inhibit only a single positive factor. There is a range of positive angiogenic factors, and many have been shown to be up-regulated in tumors. More importantly, individual tumors can express several angiogenic factors,[23] and thus may have a number of routes around such a specific approach.

Angiogenic inhibitors as therapeutic agents

An alternative approach is to use an angiogenesis inhibitor to counter the effects of all angiogenic factors produced by a tumor. These agents can be synthetic inhibitors of endothelial cell proliferation, such as synthetic derivatives of fumagillin, or endogenous inhibitors of angiogenesis, often fragments of larger inactive circulatory proteins, that function physiologically in maintaining vascular quiescence or curtailing physiological angiogenesis. These endogenous agents can be highly potent inhibitors of endothelial proliferation and may be more effective than synthetic agents because they may also inhibit the capillary remodeling involved in expansion of tumor vessels. An-

giostatin and endostatin are currently the most potent agents, both having striking anti-tumor activity. Others include a 140 kDa fragment of thrombospondin, a protein normally involved in platelet aggregation under the regulation of the tumor suppressor gene p53.[24, 25]

Angiostatin and endostatin

The discovery of angiostatin and endostatin, two potent endogenous inhibitors of angiogenesis with powerful anti-tumor activity in mice, has produced great interest in the clinical use of angiogenesis inhibitors.[26-28] Both were discovered as a result of the observation that the presence of a primary tumor can occasionally inhibit the development of metastases: when the primary tumor is removed, metastases develop rapidly.

Folkman hypothesized that the primary tumor produced angiogenesis inhibitors, perhaps incidentally as a result of proteolytic degradation. These inhibitors persist in the circulation while local angiogenic promoters are degraded and exert no systemic effect. Angiostatin and endostatin were identified from experimental tumors that demonstrated this phenomenon.

Both are fragments of larger circulatory proteins with no angiogenic activity. Angiostatin is a 38 kDa fragment of plasminogen, and endostatin is a fragment of collagen XVIII, a type of collagen found exclusively in blood vessels. Their anti-tumor activity in mice is impressive, being able to cause regression in various solid tumors of up to 1% of body mass. There is no evidence of drug resistance, even after multiple treatment cycles.[29] Research efforts are currently directed at elucidating the precise mechanism of action of these agents and at their large scale purification before they are tested in clinical trials.

Targeting endothelial cells of tumors

Another experimental anti-vascular approach to treating tumors is to target tumor endothelial cells with a toxin directed at a cell marker specific for tumor endothelium and to cause infarction of the tumor by inducing coagulation within the tumor vessels. This has been shown to be effective experimentally in a neuroblastoma that had been genetically engineered to express class II histocompatibility antigens on tumor endothelial cells. These antigens are normally absent from endothelial cells, so they served as specific markers for tumor vessels. A toxin was constructed consisting of an antibody to class II antigens linked to a truncated form of tissue factor that would cause coagulation only when bound to an endothelial cell by the antibody. This toxin induced complete regression of the experimental tumor by thrombosis of the tumor vessels while leaving the host vasculature intact.[30]

Potential endogenous target molecules include integrin $\alpha_v\beta_3$, which is expressed only on proliferating vessels in healing wounds and in tumors. Antibodies to integrin $\alpha_v\beta_3$ promote tumor regression by inducing endothelial cell apoptosis.[31]

Approaches to anti-vascular treatment

Neutralizing angiogenic promoters

Interfere with the positive effect of angiogenic factors produced by a tumor

Examples include

Antibodies to vascular endothelial growth factor

Viral delivery of dominant negative receptors to vascular endothelial growth factor

Prevent release and activation of fibroblast growth factor 2

Endogenous angiogenic inhibitors

Use endogenous inhibitory proteins to counter the angiogenic stimulus produced by tumors

Examples include

Supply of angiogenic inhibitors directly—such as angiostatin, endostatin

Gene transfer of DNA to angiogenesis inhibitors—angiostatin, platelet factor 4

Endothelial cell targets

Use specific markers for tumor endothelial cells to direct a toxin or antibody to tumor vasculature to cause tumor infarction

Targets include

Integrin $\alpha_v\beta_3$

Vascular endothelial growth factor-receptor complexes

Endoglin

Synthetic angiogenic inhibitors

Inhibit tumor angiogenesis with drugs that specifically prevent endothelial cell division

Can act synergistically with conventional cytotoxic treatment and with "hypoxia-activated" cytotoxic drugs

FUTURE DEVELOPMENTS

Pre-clinical research into tumor angiogenesis has led to the identification of several anti-vascular treatments with impressive efficacy in animal models of human cancer. Currently, 19 anti-vascular agents are being assessed in clinical trials, mostly in phase I and II trials that involve treating patients with advanced metastatic disease resistant to other treatments. (Information about current trials can be obtained from the National Cancer Institute's website at cancertrials.nci.nih.gov.)

There are occasional reports of striking clinical remissions,[32] but the real efficacy of these agents will only become apparent over the next decade as they are fully evaluated in extensive clinical studies either alone or with standard treatments.

As inhibition of angiogenesis may induce dormancy of

a tumor rather than killing it, there is growing appreciation that the administration of these agents, and their assessment in clinical trials, may need to be different from that used for cytotoxic drugs. Indeed, it is possible that these agents could be effective in maintaining long-term remission, an approach not currently used for solid tumors.

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capsule

Women suffer more motion sickness Women report more motion sickness than men, but aeronautical researchers failed to find a biologic reason for the difference in experiments on volunteers (*Aviation, Space, and Environmental Medicine* 1999;70:962-965). Students from Pennsylvania State University were awarded extra course credits for volunteering to sit in a rotating drum for quarter of an hour while researchers measured their gastric reactivity. The recordings were similar in men and women, but women retrospectively reported feeling worse. Interestingly, the women did not report worse symptoms while the drum was rotating.

capsule

Doctors prefer oral contraceptives Doctors in Missouri don't know much about natural family planning (*Obstetrics and Gynaecology* 1999;94:672-678)—but then they don't tend to use it themselves (*Obstetrics and Gynaecology* 1999;94:666-671). A nationwide survey found that women doctors in America liked oral contraceptives best, followed by condoms and diaphragms. The rhythm method was their least favored contraceptive option.

MEDICINE CABINET

Use of methadone

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Opiate dependence is a major public health problem associated with the transmission of deadly diseases (human immunodeficiency virus [HIV], hepatitis), criminal activity, accidental overdose, hospital admissions, and death. The treatment of opiate dependence is controversial, and in most patients, a lifelong duration is probably required.[1] Methadone is a synthetic opiate primarily used in the detoxification and maintenance of patients who are dependent on opiates—particularly heroin—and the treatment of patients with chronic, severe pain.

In the United States, methadone may be prescribed by physicians and dispensed by community pharmacies for analgesia as a Schedule II drug under the regulations of the Controlled Substances Act. However, when used for the treatment of opiate dependence, methadone's accessibility is restricted to practitioners, clinics, and pharmacies licensed by the Food and Drug Administration for this purpose.

PHARMACOLOGY AND MECHANISM OF ACTION

Methadone is a synthetic, long-acting opioid with pharmacologic actions qualitatively similar to morphine and is active by oral and parenteral routes of administration.[2] It is primarily a μ-receptor agonist and may mimic endogenous opioids, enkephalins, and endorphins and affect the release of other neurotransmitters—acetylcholine, norepinephrine, substance P, and dopamine.[3] This accounts for its analgesic and antitussive properties, respiratory depression, sedation, decrease in bowel motility, increase in biliary tone, hormone regulation and increase of prolactin and growth hormone release, miotic pupils, nausea, and hypotension. Patients develop tolerance and physical dependence following repeated use. The tolerance may be only partial for most of the pharmacologic effects. An abstinence syndrome consisting of lacrimation, rhinorrhea, sneezing, gooseflesh, nausea, vomiting, fever, chills, tremor, and tachycardia occurs on abrupt discontinuation of the opiate or the administration of an antagonist such as naloxone hydrochloride. There is cross-tolerance and cross-dependence among the various opiates. This is the premise for using methadone in the detoxification and maintenance of heroin people addicted to heroin. Due to the long half-life and duration of action of methadone, the abstinence syndrome is delayed and prolonged but less severe than that from a shorter-acting opiate such as heroin.

INDICATIONS AND DOSING

Maintenance

Maintenance therapy is the long-term administration of methadone hydrochloride to patients who are dependent on opiates. The aim is to substitute methadone, a legal, oral opiate with a long half-life, for the illicit, parenterally administered heroin, which is associated with a high risk of morbidity and mortality. Methadone maintenance therapy offers a reprieve from the daily life associated with the procurement and use of heroin and allows a person to reintegrate as a functional member of society. Methadone therapy achieves this by preventing opiate withdrawal symptoms, blocking the euphoric effects of heroin, and minimizing the craving for heroin. Methadone maintenance has been shown to reduce illicit heroin use,[4] decrease the incidence of infectious disease (such as HIV and hepatitis) commonly contracted through needle sharing,[5] reduce criminal activity,[6] improve social outcome,[7] and reduce mortality.[8]

A dose of 5 mg of parenteral heroin is approximately equivalent to 20 mg of oral methadone.[9] Because the purity of street heroin varies considerably, however, empiric methadone dosing is recommended instead of equivalent dosing based on recent heroin use.

The dosage of methadone in maintenance therapy remains controversial. It is usually started at 10 to 20 mg and increased in 10-mg increments until the withdrawal symptoms are controlled. Most patients can be maintained at 40 mg a day to control withdrawal symptoms but not eliminate drug craving. Evidence supports the need to administer higher doses of methadone for effectiveness.[10] In the past, it was common to administer the lowest dose possible to curb opiate withdrawal symptoms. However, because a major concern is the high risk of HIV conversion among persons using the intravenous drug–using population, methadone's effectiveness is more accurately measured by the incidence of illicit intravenous heroin use. Strain and coworkers showed that patients given methadone doses of 80 to 100 mg a day versus 40 to 50 mg a day had a much lower incidence of surreptitious, illicit heroin use during maintenance therapy.[10] In a retrospective study, Caplehorn and associates determined that patients receiving 40 mg of methadone a day were 2.2 times more likely to use heroin than patients receiving 80 mg a day when enrolled in a methadone maintenance treatment program.[11]

Detoxification

Methadone detoxification involves the short-term administration of methadone hydrochloride to blunt the abstinence symptoms of patients who are dependent on opiates and then tapering the dose of methadone with the goal of achieving a drug-free state. The major disadvantage of

Waiting in line for methadone at San Francisco General Hospital

detoxification in these patients is the high recidivism rate of heroin misuse after completing detoxification.[12] The high recidivism rate may be attributed to a physiologic state and abstinence syndrome that persists long after long-term opiate use ceases.[13]

For detoxification, treatment doses are usually started at 10 to 20 mg and increased in 10-mg increments until the withdrawal symptoms are controlled. A dosage of 40 mg a day controls the withdrawal symptoms for most patients but does not eliminate heroin craving. Once the dose required is established to eliminate withdrawal symptoms, the patient is stabilized on this dose for 2 to 3 days. Then the dose is reduced daily or every other day.[14] A 10% to 20% dose reduction is usually tolerated, but this must be tailored for each patient. If patients are experiencing abstinence symptoms or have a high risk of relapsing into heroin misuse, the practitioner should consider increasing the dose and slowing the tapering schedule. Individual tapering schedules may vary from weeks to months.[9] Patients should be monitored for withdrawal symptoms after the discontinuation of methadone, bearing in mind that withdrawal symptoms may not be evident for 48 to 72 hours following their previous dose.

Pain

Methadone is a good therapeutic alternative to morphine sulfate and other opiate analgesics in the treatment of severe, chronic pain.[15] It is well absorbed orally, has analgesic effects comparable to other μ-opiate receptor analgesics like morphine,[16] has a long half-life, and is not metabolized to any active metabolites that may pose a risk to the patient.

Morphine and methadone are both effective analgesic agents. In patients treated with opiates for chronic pain, the equivalent analgesic doses for morphine and methadone do not always follow a linear relation, so caution should be taken when switching a patient from morphine to methadone.[17]

Parenteral methadone is about twice as potent as oral methadone. The normal adult dosage of methadone is 2.5 to 10 mg every 3 to 4 hours as needed for severe pain and 5 to 20 mg every 6 to 8 hours as needed for severe, chronic pain (for example, for patients who are terminally ill).[9] The dosage and dosing interval of methadone for pain relief vary considerably. The dose should be adjusted to the individual needs of the patient.

Although methadone has a long half-life, analgesia is not related to the serum half-life, and frequent daily dosing intervals are usually required for pain relief.[18] Caution should be taken not to increase the dose too high or too frequently when initiating therapy because toxic effects may ensue. Adjunctive analgesics should be considered during the first few days of the initiation of the methadone regimen.

Methadone is a good alternative for patients who are being given maximum doses of morphine. However, determining the proper methadone dose based on a patient's current morphine requirement may be challenging. The relative equivalent analgesic dose of morphine to methadone has varied from 1:1 to 14:1 (14 mg of morphine to 1 mg of methadone).[17]

USE IN PREGNANCY

Methadone crosses the placenta and can cause fetal dependence.[19] Therefore, the administration of methadone during pregnancy should be limited to patients with an established opiate dependence. Opiate detoxification during pregnancy is not recommended because fetal distress has been documented during maternal withdrawal from opiates.[20] Pregnant women who are dependent on opiates and their fetuses do better on a regimen of methadone rather than being untreated.[21] The advantages of methadone maintenance treatment during pregnancy include longer gestational periods and higher birth weights than in mothers who are heroin users and are not treated,[22] as well as a lower risk of fetal exposure to infectious diseases contracted through needle sharing.[5]

Lower concentrations of methadone in the plasma and increased methadone clearances have been reported during pregnancy, likely due to increased metabolism.[23] Higher doses may be required, especially in the third trimester. Dosage should be tailored to the individual during pregnancy to minimize the chance to relapse to heroin use and prevent withdrawal symptoms.

Neonates born to women who are dependent on methadone are at risk of developing an opiate abstinence syndrome, but the syndrome tends to develop more slowly, is more moderate in severity, and lasts longer than in infants born to heroin-dependent women.[24]

DRUG INTERACTIONS

The interaction of other drugs with methadone may be classified as either pharmacodynamic (having effects on the mechanism of action) or pharmacokinetic (having effects on absorption, distribution, and elimination).[25] These interactions may vary in their magnitude and do not necessarily prohibit the concomitant administration of other drugs. The table provides examples of drug interactions with methadone.[25-30]

OVERDOSE AND ADVERSE REACTIONS

Although methadone's long duration of action may be advantageous from a therapeutic perspective, it is a risk factor for overdose.[32] Because of accumulation of the drug, it may be difficult to increase the dose in patients who are not tolerant to methadone. In addition, methadone has a prolonged interval of toxicity that may extend to several hours or days, and it is, therefore, important to observe patients for about 48 hours after a methadone overdose. Another important risk factor includes extremes of age (infants and elderly patients) because of differences in the pharmacokinetics and pharmacodynamics of methadone in these patients. For example, one 10-mg tablet (a therapeutic adult dose) has killed a child,[33] and 30 mg administered intravenously caused respiratory depression for several days in an 81 year old.[34] The most severe consequential effect from methadone is the potential for apnea, respiratory failure, and hypoxia, leading to coma, seizures, hypotension, and death. This effect may account for the deaths in patients that occurred when methadone was initiated at high doses in methadone maintenance programs.[35] Other deaths may be attributed to the use of multiple drugs and substances (for example, alcohol) with methadone. Naloxone, an opiate antagonist, can reverse methadone's toxic effects in patients with overdose. Noncardiogenic pulmonary edema has resulted from therapeutic doses.[36] Other adverse effects associated with long-term administration have included increased sweating, constipation, appetite disturbances, sexual dys-

Table *Drug interactions with methadone*

Drug	Interaction type	Clinical effect	Practitioner considerations
Naloxone, naltrexone, pentazocine, nalbuphine-mixed opiate antagonists/partial agonists	Pharmacodynamic—receptor blockade	Precipitate abstinence syndrome	Must avoid in patients on methadone therapy; may use naloxone to treat overdose
Rifampin, carbamazepine, phenytoin,[26] nevirapine[27]	Pharmacokinetic—enhance elimination	Reduce blood concentrations and effectiveness and may produce abstinence syndrome	Increase dose of methadone
Benzodiazepines, ethanol	Pharmacodynamic—additive/synergistic CNS depression	Increased sedation and risk of respiratory failure	Avoid in patients on methadone therapy
Ritonavir,[28] fluvoxamine[29]	Pharmacokinetic—decreased metabolism	Produce methadone toxicity	Reduce dose of methadone
Zidovudine,[30] desipramine[31]	Pharmacokinetic—reduced clearance	Increased risk of zidovudine and desipramine toxicity	Reduce zidovudine dosage and monitor for toxicity; monitor desipramine serum concentrations
Thyroxine	Laboratory increased concentrations of thyroxine binding globulin	Altered thyroid function tests (increased T_3, T_4, FTI, and TBG).	Monitor for euthyroid state with free T_3 and T_4 and TSH levels
Opiate analgesics	Pharmacodynamic cross-tolerance between opioid agents	Partial tolerance to analgesic effect of opioids	Titrate and adjust dosage interval to attain analgesia, avoid mixed agonist-antagonists (eg. pentazocine) or substitute with non-narcotic analgesics (eg. NSAIDs)

T_3 = triiodothyronine, T_4 = thyroxine, FTI = free thyroxine index, TBG = thyroxine binding globin; TSH = thyroid-stimulating hormone; NSAIDs = nonsteroidal anti-inflammatory drugs

function, abnormal menses, urinary retention, rash, blurred vision, sedation, irritability, insomnia, biliary pain, hypoventilation, generalized edema, gynecomastia, galactorrhea in men and women, hepatotoxicity, and gastrointestinal symptoms.[37,38] Although these effects are usually transient and not life-threatening, they may foster nonadherence or intolerance to the long-term use of methadone.

CONCLUSIONS

Methadone is a long-acting opiate used in the treatment of opiate dependence and detoxification and for patients having chronic, severe pain. There is increasing evidence that long-term methadone use in patients who are dependent on opiates has substantial societal benefits, including diminishing illicit opiate use, reducing the transmission of HIV and hepatitis, and decreasing criminal activity and healthcare costs in this population.[39] A number of obstacles to methadone treatment exist. These include restrictive governmental regulations, the stigma of opiate addiction, and the lack of healthcare practitioners and clinics sanctioned by Food and Drug Administration that are capable of providing therapy to all patients who may benefit.

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CURBSIDE CONSULT

Martin Honeysett

Does "white coat hypertension" increase the risk for any adverse outcome from hypertension?

Patients with "white coat hypertension" have elevated blood pressures when measured in health care settings but normal blood pressures otherwise. First described in 1940, white coat hypertension has been estimated to account for about 20% of all cases of hypertension.[1] Unlike the consensus reached on the diagnosis and treatment of sustained hypertension—disseminated in periodic reports from the Joint National Committee on the Detection, Evaluation, and Treatment of High Blood Pressure—the diagnosis, treatment, and clinical implications of white coat hypertension remain uncertain and controversial.

Periodic monitoring of patients for evidence of early target organ damage or sustained hypertension is prudent

White coat hypertension is best diagnosed by obtaining normal average daytime blood pressure measurements, using 24-hour ambulatory blood pressure monitoring, in patients who have elevated blood pressures in health care settings. These monitors are often programmed to measure blood pressures every 15 to 30 minutes during a patient's usual daily activities. A daytime average blood pressure of greater than 135/85 mm Hg in an ambulatory person has been proposed as a reasonable cutoff for diagnosing the presence of hypertension. Unfortunately, population norms for average 24-hour daytime blood pressures have not been determined, and published studies have often used different definitions for white coat hypertension.[2,3]

Although not reported consistently, white coat hypertension has been associated in some studies with an increased risk of sustained hypertension[4] and target organ damage, such as left ventricular hypertrophy.[5] The actual risk posed by white coat hypertension on cardiovascular disease end points—such as stroke, myocardial infarction, and hypertensive nephropathy—however, remains unclear. To date, few prospective studies have been done of patients with white coat hypertension diagnosed by ambulatory blood pressure measurement. Khattar and colleagues in a recent study reported that white coat hypertension was an independent predictor of cardiovascular disease events during a period of 9 years of follow-up, but the risk of such events was lower than among patients with sustained hypertension.[6] Other prospective studies of shorter duration have failed to observe any relation between white coat hypertension and an increased risk of cardiovascular morbidity.[7]

Data from follow-ups longer than 9 years are not available. In general, the risk for target organ damage and cardiovascular disease events associated with white coat hypertension appears to be intermediate between that of normotensive persons and patients with sustained hypertension.

For most practitioners, the biggest challenge remains the detection, treatment, and adequate control of sustained hypertension. Recent national survey data indicate that hypertension goes undetected in about 30% of people who have the disease, 50% of those whose hypertension is detected are not taking medication, and 70% of those taking antihypertensive medication continue to have blood pressures higher than 140/90 mm Hg.[8]

White coat hypertension may not be an entirely benign condition

Because white coat hypertension has a comparatively benign prognosis, at least in the short term, most authorities would, in the absence of evidence of target organ damage, defer pharmacologic treatment of patients having this diagnosis.

Nevertheless, white coat hypertension may not be an entirely benign condition, and periodic monitoring of patients for evidence of early target organ damage or sustained hypertension is prudent. A greater use of 24-

hour ambulatory blood pressure monitoring is also warranted to identify the disorder and to prevent the unnecessary pharmacologic treatment of patients diagnosed as having it.

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The power of the prune

On a typical afternoon in the pediatric clinic, Mrs. Johnson brought in her 4-month old daughter for a well-child examination. I went through the usual discussion of proper nutrition, safety precautions, and other matters of anticipatory guidance. As I was finishing our visit, I asked Mrs. Johnson, a first-time mother, if she had any questions. She said that she did have a concern about some constipation that her daughter had been having. I assured her that this problem was common, and I recommended a time-honored remedy in the pediatric world: diluted prune juice. I told Mrs. Johnson that a couple of ounces of prune juice diluted 1:1 with water should do the trick. Mrs. Johnson, looking somewhat skeptical, said, "But Doctor, do you think it will work?" I responded with the following story:

During the internship year of my pediatric residency, my uncle Marden had invited me and my friend Ron, another medical intern, to his house for dinner. Upon arriving at his home, my uncle informed us of his plan to take us out to a wonderful Chinese restaurant. Before leaving for dinner, however, he had prepared an appetizer at home. For some unknown reason, my uncle had prepared a large serving of stewed prunes. Starving, and hence forgetful of the potency of the fruit we were about to eat, my fellow physician and I began indulging in the delicacy. The prunes were quite tasty. One after another, we consumed them. Ron even asked for the recipe. After about 20 stewed prunes each, feeling slightly bloated, we proceeded to the Chinese restaurant.

On the way there, Uncle Marden described all the special dishes awaiting us—wonton soup, crispy chicken, Mongolian beef, and a unique almond pudding for dessert. We arrived at the restaurant, eagerly anticipating the first dish. The wonton soup was exactly as Marden had described it—made to perfection. We wolfed it down with passion. As we waited for the main courses to arrive, Ron and I agreed that we were actually already quite full. Knowing us to be hearty eaters, Marden was perplexed that we were full after eating merely some soup. Nevertheless, we cancelled our order and headed back home.

At home, what took place made *Vibrio* infection look like a romp in the park. Like clockwork, every 15 minutes, the shriveled plums consumed earlier that day made their awesome power known. Somehow, these prunes created the right temperature and pressure conditions to achieve the "triple point" we studied so well in our basic chemistry courses—the point where a substance exists as solid, liquid, and gaseous forms simultaneously. At least one third of the Amazon rain forest was destroyed in order to provide the toilet paper needed that evening—the environmental impact of our dainty appetizer was astronomical. And I was not alone in my misery. Doctor Ron, in the guest bathroom, suffered the exact same fate. There we were—two physicians, victims of our own negligence.

After recounting this tragic-comic adventure to the mother of my 4-month old patient, I returned to her original question. "Yes, Mrs. Johnson, the prune juice will work."

Abraham Broudy, Los Angeles, CA

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TOOLBOX

Assessing and managing male sexual problems

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ASSESSING PROBLEMS

Men are more likely than women to present with and be treated for sexual problems. Nevertheless, they usually find these problems difficult to talk about, and an initial perception that their problem is being dismissed can considerably delay or prevent them from seeking further help. Spending time to establish as clearly as possible the nature of the problem is likely to lead to more effective treatment and may in itself be therapeutic. Likewise, talking to the partner can reveal a different picture, may substantially alter management, and can have a therapeutic effect.[1]

Sometimes simple interventions—information, reassurance, contraceptive advice, or talking to a member of the primary care team for basic problem solving or nondirective counseling—can resolve sources of considerable distress to patient and partner. Suggesting sources of self-help information, such as books on sexuality, can also be valuable.

When the problem persists despite primary care interventions, further help should be sought from other services. Optimum assessment and treatment are provided in a multidisciplinary setting; therefore, the choice of where to refer a patient will have a critical effect on treatment and, possibly, outcome.

CLASSIFICATION OF SEXUAL DYSFUNCTION

The accepted diagnostic categories for sexual dysfunction described in the international classification of diseases, tenth revision (ICD-10),[2] and the *Diagnostic and Statistical Manual of Mental Disorders,* fourth edition (DSM-IV),[3] do not reflect the reality of sexual dysfunctions in the clinical setting. When these classifications are used, it must be remembered that

- Sexual dysfunctions are not all-or-nothing phenomena but occur on a continuum in both frequency and severity. With our current knowledge, any cutoff is inevitably arbitrary;
- It is rarely possible to identify cases with a purely organic or purely psychogenic cause. Indeed, with our growing knowledge from the fields of psychoneuropharmacology and endocrinology, the distinction between organic and psychogenic becomes increasingly blurred; and
- Comorbidity of sexual dysfunctions is common. For example, nearly half of men with low sexual desire have another sexual dysfunction, and 20% of men with erectile dysfunction have low sexual desire.

What constitutes a sexual problem?

- Physiologic dysfunction
- Altered experiences
- Own perceptions and beliefs
- Partner's perceptions and expectations
- Altered circumstances
- Past experiences

In addition to the intrapersonal complexity of sexual problems, the patient's partner and their relationship probably have a more profound effect on sexual health than on any other aspect of health. In as many as a third of patients with sexual problems, the partner also has a sexual dysfunction. The interactions between various aspects of sexual problems experienced by a couple are complex, often circular, and rarely reveal simple causal or consequential relationships.

Inhibited sexual desire

Abnormalities of sexual desire—and indeed, sexual desire itself—are difficult to define.[4] The factors considered by clinicians and patients when gauging desire include sexual fantasies, arousal, thoughts, and activity. Given the confusion over the meaning of the concept, it is not surprising that views differ about the term that best describes it. The ICD-10 uses the term "sexual desire," and other terms include "sexual drive" and "sexual interest," but the use of "libido" is no longer favored.

Sexual fantasies, the desire for sexual activity, and distress about the level of desire in a patient and his partner all contribute to the construct of inhibited sexual desire. It is more commonly reported in women than in men (by both women and men) in the general population and in clinic populations. Differences in sexual desire often lead to considerable distress for a couple and can be a source of major conflict in a relationship (figure 1).

Inhibited sexual desire is often associated with other sexual dysfunctions in the patient or partner. The lifetime prevalence of depression and anxiety disorders is increased. There is a strong association with emotional distance and conflict within a relationship, although from the studies available, it is impossible to determine whether this is a cause or consequence. Indeed, it is probably meaning-

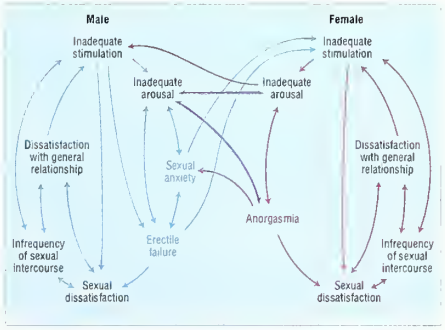

Figure 1 The complex interactions of the effects of a sexual relationship and general relationship between partners (adapted from Gregoire A, Prior JP. *Impotence: an integrated approach to clinical practice.* Edinburgh (Scotland): Churchill Livingstone; 1993).

less to attempt to do so from population studies because of the great individual variability and the gradual, transactional nature of change in these aspects of relationships.

Characteristic cognitive features have been identified in many patients—for example, the belief that desire does not gradually develop during a sexual encounter but must either be present at the start or does not occur at all and the belief that subtle feelings such as warmth or tenderness are not sexual and that sexual arousal cannot take place without intense, overtly erotic, feelings.

Sexual desire in men can be inhibited by a wide range of physical factors. This can be due to the general effects of illness such as a severe bout of flu or chronic renal failure or to specific effects such as those seen in alcoholism, liver disease, testosterone deficiency, and prolactin-secreting pituitary tumors (which may occur in as many as 10% of men presenting with inhibited sexual desire). Reduced sexual desire is also often a side effect of drugs such as antihypertensives, antidepressants and antipsychotics, anticonvulsants, and cytotoxic agents.

Most studies of outcome indicate that patients' responses to psychological intervention for inhibited sexual desire is poor.[5]

Erectile dysfunction

Erectile dysfunction occurs in 10% to 15% of men but varies with age, with some degree of dysfunction being experienced by 40% of men at age 40 and by 70% at age 70. In most patients, there are both organic and psychological causal factors, and assessment and treatment must take account of this.

Various treatments are available, but data on their relative effectiveness and long-term effects are still lacking. Although clearly there is no ideal treatment, there is usually one that is both effective and acceptable to a man and his partner. Sildenafil citrate represents an important advance but seems to be a victim of its own success, with concerns about costs and misuse.[6]

Premature ejaculation

Premature ejaculation is an inability to control ejaculation sufficiently to permit both partners to enjoy sexual intercourse. This may result in ejaculation shortly after penetration or, in severe cases, before penetration.

Sometimes the true problem is an erectile difficulty that necessitates prolonged stimulation to achieve adequate erection and, therefore, an apparently short period before ejaculation. About 20% of men have premature ejaculation, and in most men, no underlying physical cause is evident. Premature ejaculation is more common in younger men, and increasing sexual experience likely involves a process of learning to control ejaculation. Anxiety undoubtedly plays an important role in hastening ejaculation in some men.

Psychological interventions are aimed at reducing performance anxiety and improving ejaculatory control, such as by the "pause and squeeze" technique. Repeatedly stopping sexual stimulation before ejaculation gradually teaches ejaculatory control. If this fails, squeezing the penis firmly between thumb and fingers at the level of the frenulum can inhibit ejaculation with similar effect. Reported success rates are conflicting, and long-term follow up suggests that benefits are not maintained.

Drug treatment with specific serotonin reuptake inhibitor antidepressants, such as sertraline hydrochloride (50 mg daily), is effective in delaying ejaculation and improving sexual satisfaction in patient and partner. Recent studies indicate that intermittent use can be as effective as continuous use, and this should reduce the rates of undesirable side effects such as nausea and decreased desire.

Retarded and absent ejaculation

Retrograde, absent, or retarded ejaculation caused by the adverse effects of drugs are seen frequently in clinic populations, although many patients do not spontaneously complain but simply stop their medication. Common causes include the use of antidepressant and antipsychotic drugs as well as prostatectomy. Cases not associated with these obvious causes are rare.

Psychological treatment focuses on reducing anxiety and increasing arousal. Increased genital stimulation is important, and patients sometimes need encouragement and permission to pursue this, including using aids such as a vibrator. One successful option for treating antidepressant-induced anorgasmia is the adjunctive use of cyproheptadine hydrochloride (2-16 mg) before sexual intercourse. However, this is a serotonin antagonist and has been reported to cause a relapse of depression in some patients.

Treatment of erectile impotence

- Simple measures: education, advice, self-help books
- Psychological: therapy for couples or for single men individually or in groups
- Oral drugs such as sildenafil citrate
- Topical vasodilators
- Intracavernosal drugs such as prostaglandin E_1
- Vacuum devices
- Prosthetic implants
- Surgery for venous leakage

Dyspareunia

Genital pain before, during, or after intercourse is rare in men, occurring in about 1% of clinic samples. The cause can be physical, such as genital infection, phimosis, and prostatitis, or psychological. No outcome studies have been done of psychological treatment of this distressing problem.

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Med.Pix

An elderly woman with a warm, painful finger

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QUESTION: A 91-year-old Russian-speaking woman arrived by ambulance to the emergency department because she was having severe pain in her right middle finger. She has had swelling of her finger for about a year. Her physician had referred her to a dermatologist 2 weeks earlier, who started her on a regimen of warm soaks and an antibiotic. Two days earlier, the physician had attempted incision and drainage, but no purulent material was obtained. Physical examination revealed the finger shown in figures 1 and 2. Palpation of the distal interphalangeal joint demonstrated firmness rather than fluctuance.

What is the differential diagnosis, and what would you do next?

Figure 1

Figure 2

ANSWER: A radiograph of the finger is shown in figure 3.

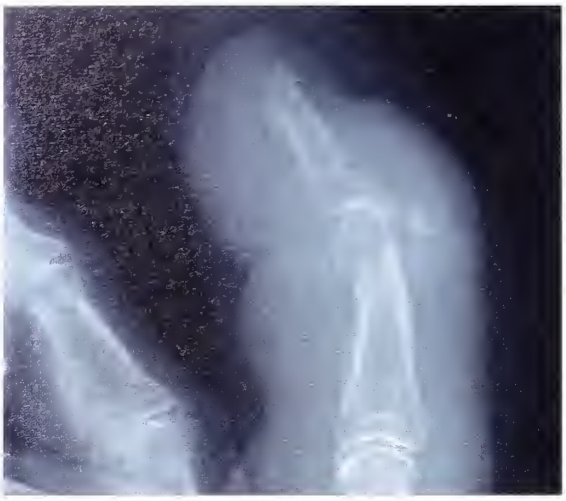

Figure 3

The findings of the radiograph and physical examination are consistent with acute gouty arthritis superimposed on tophaceous gout. The diagnosis was confirmed by an aspirated specimen from the finger that showed, both intracellularly and extracellularly, negatively birefringent, needlelike crystals. After consultation with a rheumatologist, a regimen of colchicine, 0.6 mg every 6 hours, was started. Her pain was markedly decreased after 24 hours. Her serum uric acid level was 0.64 mmol/L (10.7 mg/dL). She was referred for management of her hyperuricemia.

EPIDEMIOLOGY

Gout is classically a disease of adult men, with a peak incidence in the fifth decade of life. From 10% to 25% of patients have a family history of gout. The incidence of gout in women increases in the postmenopausal period when the uricosuric effect of estrogen is lost.[1]

The clinical characteristics of gout in the elderly differ appreciably from those in younger patients (see box).[2]

PATHOPHYSIOLOGY

Gout is manifest by acute attacks of crystal-induced arthritis and by ongoing deposits of monosodium urate, or tophi, in and about the joints and subcutaneous tissue.[3] Hyperuricemia leads to gout, although this complication occurs in only a few patients with elevated urate levels. Primary gout is the result of an inborn error of purine metabolism, leading to increased production of uric acid. Secondary gout results from either increased production in certain disease states or as the result of decreased excretion, either from disease state or drug therapy. Tophaceous gout is a consequence of the long-term inability to excrete urate as rapidly as it is produced.[4] Tophi development is more likely to occur the longer hyperuricemia is present and/or the higher the serum urate level becomes. The yellow-white patches visible in the finger in Figures 1 and 2 are the tophi. The violaceous skin color shown in the photographs is typical of the overlying skin seen in acute gouty arthritis.

DIFFERENTIAL DIAGNOSIS

Other causes of acutely swollen, painful joints include infections such as cellulitis, septic arthritis, osteomyelitis, or septic bursitis; pseudogout (calcium pyrophosphate crystals); calcific periarthritis; joint trauma; or other inflammatory arthritides. The presence of tophi, if recognized, is a hallmark of gout.

TREATMENT

In young healthy patients who have no contraindications, first-line therapy for acute gouty arthritis is usually with nonsteroidal anti-inflammatory drugs.[5] These drugs are rapidly effective in most patients in relieving pain and reducing inflammation, especially if they are taken soon after the onset of an attack. A second-line therapy for an acute attack of gout is colchicine. The use of nonsteroidal anti-inflammatory drugs is fraught with problems in older patients. Colchicine therapy may also present unacceptable risks in an older patient, especially when given intravenously. In addition to gastrointestinal intolerance, colchicine use may exacerbate renal failure or produce bone marrow suppression, hepatic necrosis, or seizures. Corticosteroids are sometimes used intra-articularly in patients with acute monoarticular gout.

Serum urate levels may be brought down using the xanthine oxidase inhibitor, allopurinol.[5] Such therapy is primarily indicated for patients with recurrent attacks of gout, urolithiasis, myeloproliferative disorders, or tophi. Urate-lowering therapy should not be initiated or discontinued during an acute attack because it can exacerbate the attack.[4,5]

Uricosuric drugs may be used in patients with chronic tophaceous gout.[1,4] Patients with massive tophaceous deposits and normal renal function may respond to a combination of allopurinol and a uricosuric agent. Surgical excision of tophi is occasionally indicated.[3]

Gout in elderly patients

- There is a more even sex distribution than in younger patients
- Gout in these patients is frequently associated with long-term diuretic use, excessive alcohol consumption, and renal insufficiency
- Gout in these patients primarily results from underexcretion, rather than overproduction, of uric acid
- Acute painful arthritis attacks occur less frequently, and tophus formation is more common in the elderly

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Screening patients for alcohol, tobacco, and other drug misuse: the role of brief interventions

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Dealing with patients who misuse tobacco, alcohol, and other drugs often seems frustrating and unrewarding. Physicians feel powerless when patients with alcoholic cirrhosis continue drinking or when patients with chronic obstructive airways disease continue smoking despite being on continuous oxygen therapy. Notwithstanding what may seem like a futile exercise, research is beginning to show that medical professionals can make a difference in patients who misuse alcohol, tobacco, and other drugs. Several studies indicate that brief interventional techniques can identify patients at risk of misusing these substances, markedly reduce tobacco and alcohol consumption, lead to positive changes in health behaviors, and even improve recovery after treatment.[1-4]

THE NEED FOR ROUTINE SCREENING

An estimated 17% to 27% of the US population will misuse alcohol, tobacco, or other drugs in their lifetime.[5] Studies also report that 10% to 50% of hospitalized patients suffer from a disorder related to substance misuse.[6-9] Likewise, more than 20% of adults seen by primary care physicians have a current or past alcohol, tobacco, or other drug misuse disorder.[10]

About 539,000 deaths in the United States each year are attributable to alcohol, tobacco, and other drug misuse, with an aggregate societal cost that exceeds $238 billion.[11] Clearly, these ailments are too common to be dealt with only by specialists; yet, they are poorly diagnosed and treated by most physicians.[12]

BARRIERS TO IDENTIFICATION AND TREATMENT

Several obstacles keep physicians from assisting substance abusing patients. Such barriers include physician pessimism about the effectiveness of intervention and treatment, a moralistic approach to substance misuse, and a perceived lack of time and training necessary to participate in successful interventions.[11,13,14] Several predictive patterns are also evident in the management of patients who misuse alcohol, tobacco, and other drugs.[15] Many physicians simply refer patients with addictive diseases to psychiatric or social services, thereby jeopardizing continuity of care. Others scold patients, and some even administer intravenous ethanol to hospitalized alcoholic patients to prevent withdrawals, but fail to address the disease formally.[16]

Many health care professionals simply ignore the diagnosis, failing to recognize these conditions as chronic psychiatric diseases characterized by relapses and remissions. Like a patient with untreated hypertension, those who are substance misusers will continue to use health care services heavily until their underlying disease is addressed.[6]

Summary points

- Most physicians think it is fruitless to assist patients with alcohol, tobacco, and other drug misuse
- Studies have shown, however, that brief interventional techniques can identify patients at risk, and reduce tobacco and alcohol consumption
- Brief interventional techniques can also lead to improved health behavior and bolster recovery after treatment

ADDRESSING THE PROBLEM THROUGH BRIEF INTERVENTIONS

For the past two decades, evidence has accumulated that supports the effectiveness of brief interventions for patients suffering from substance misuse. The literature contains nearly 40 controlled studies on brief interventions targeting drinking behavior. These studies included more than 6,000 problem drinkers in various clinical settings and across 14 nations. Brief interventions were consistently found to be effective in reducing alcohol consumption and facilitating treatment referral.[17] The World Health Organization directed the largest randomized study in which 1,655 patients had either one 20-minute interview (control); an interview and 5 minutes of advice; or an interview, 5 minutes of advice, 15 minutes of counseling, and a self-help manual. The results showed significant and similar decreases in alcohol consumption in the experimental groups, regardless of the length of the intervention.[18]

A Canadian randomized study evaluating three brief interventional methods in 159 adults showed a reduction in the frequency and quantity of drinking of 66% for men and 74% for women. There was no difference in the length of the intervention or whether the advice was given by the patient's own physician, an assigned physician, or a nurse.[19] A meta-analysis of 12 randomized controlled trials showed that those receiving brief interventions were twice as likely to have moderated their drinking at 6 to 12

months' follow-up as those who received no intervention. This was consistent across sex, intensity of intervention, or type of clinical setting.[20]

In Spain, a multicenter randomized controlled trial with a follow-up of 12 months evaluated brief interventions in 229 patients. It showed that a 15-minute physician intervention led to 67% of patients reaching their target to reduce alcohol consumption compared with 44% of patients who were given only 5 minutes of physician advice.[21]

In the United States, a randomized controlled clinical trial with a follow-up of a year looked at the efficacy of brief physician interventions in 723 problem drinkers. The intervention consisted of two 10 to 15 minute counseling visits delivered by physicians using a scripted workbook that included advice and education. On follow-up, a significant reduction was found in the mean number of weekly drinks, episodes of binge drinking, frequency of excessive drinking, and length of hospital stays.[4]

This study was repeated in 146 older adults, and at follow-up, the intervention group showed a 34% reduction in the average number of drinks per week and a 74% reduction in the average number of bingeing episodes. The sample was too small to analyze the use of health care.[22]

A British study of 263 heavy drinkers admitted to surgical and orthopedic hospital wards showed that 52 of 84 study patients (62%) accepted referral to treatment following a brief intervention. Self-reported alcohol problems were significantly reduced and abstinence periods and work performance were significantly improved during the 1-year follow-up.[23]

A meta-analysis of 39 controlled trials on smoking cessation also showed higher success rates at 6 and 12 months associated with a brief intervention by a health care professional.[24]

Two studies in the United States addressed the efficacy of physician-delivered brief smoking interventions in 2,547 adults observed for 12 months. Smoking intervention by physicians was well received by patients and substantially increased long-term cessation. Interventions were augmented with the prescription of nicotine replacement. Telephone counseling during the follow-up was found not to contribute significantly to changes in smoking behavior.[25,26]

BRIEF INTERVENTION MODEL

A brief intervention is generally characterized by the following components (see box).[2,24]

The use of five words beginning with the letter "A," based on a model from the National Cancer Institute to help patients stop smoking, can help clinicians remember the components of a brief intervention[27]:

Characteristics of a brief intervention

- Full assessment of the patient's medical status by a health care professional
- Feedback about the health consequences of the assessment findings
- Opportunity for reflection by the patient, with an emphasis on his or her responsibility to change
- Clear recommendations on making changes, including contracting toward specific goals
- Follow-up care to monitor progress toward recovery

Ask

Health care professionals must inquire about substance misuse at every visit. The CAGE questionnaire (see box) screens for alcohol and drug misuse.[1]

The questionnaire has a 91% sensitivity and a 77% specificity for alcohol misuse. The probability of alcoholism increases with each positive response: 1 = 50%, 2 = 70%, 3 = 90%, and 4 = 99% or more. Similar sensitivities and specificities are found when the CAGE questionnaire is used to screen for other drugs.[1]

Patients should be asked for details about the type, quantity, and frequency of substance misuse. They should be considered at risk for substance misuse if their alcohol consumption is more than 14 drinks per week or 4 drinks per occasion for men or more than 7 drinks per week or 3 drinks per occasion for women.[3,11] They should also be considered to be at risk for substance misuse if they currently use illegal drugs; regularly use tobacco; have any maladaptive pattern of prescription or over-the-counter drug use; or have any evidence of use resulting in physical, legal, or social consequences.[2]

Advice

All patients should be educated about the health hazards of tobacco, alcohol, and other drugs, along with their potential for addiction.

CAGE questionnaire

- Have you ever felt you should Cut down on your drinking/drug use?
- Have people Annoyed you by criticizing your drinking/drug use?
- Have you ever felt bad or Guilty about your drinking or drug use?
- Have you ever taken a drink or used drugs first thing in the morning (Eye-opener) to steady your nerves or get rid of a hangover?

Assess

Ask the patient, "Are you ready to quit?" or "Are you ready for a change in your life?" If the answer is yes, proceed to the next step. If the answer is no, remind the patient of the health hazards of continued use and reassess the patient's readiness for change at each follow-up visit.

Assist

Discuss setting a quit date and address the patient's plans to deal with "triggers" or cravings. Exploring the patient's family and social support networks. Consider referral to psychiatric or social services, an addiction medicine specialist, a 12-step program, or other social support groups. Clinicians should contact their hospital's social services or psychiatry departments to get a complete list of resources.

Arrange

Follow-up visits are important to assess progress. Patients should be reminded that relapses are common and that the medical team will be there to help as long as they still want to change. When relapses occur, the patient should be encouraged to explore triggers, and plans to deal with cravings should be updated. Patients should be encouraged to participate in a 12-step program.[28]

12-STEP PROGRAMS AS IMPORTANT ADJUNCTS

Twelve-step programs have proved to be highly effective and predictive for maintaining sobriety.[28] All programs are modeled after Alcoholics Anonymous (AA), which was founded in 1935 by two "hopeless alcoholics"—Bill W. and Dr Bob, a surgeon—who wanted desperately to keep from taking another drink. The third member of AA was Bill D., who was a patient at a local hospital.[29] Membership is free, the only requirement being a desire to stop drinking or using drugs (not abstinence). The steps are a prescription for personal growth and development. Other 12-step programs include Nicotine Anonymous, Narcotics Anonymous, Cocaine Anonymous, Adult Children of Alcoholics, and Al-Anon. Alanon, Adult Children of Alcoholics (ACA) and Alateen are 12-step programs for family members of alcoholics and addicts. Their goal is to heal the family by having its members explore and address the dysfunction created by the substance misuser. As stated below, physicians should refer family members to these groups, even if the substance misuser is not interested in

Natasha Lane/AP

Gambling can be enjoyable but also addictive

Table *Stages of change, patient level of motivation and appropriate physician interventional tasks*

Stage of behavioral change	Patient level of motivation	Motivational task by physician
Precontemplation	Denial	Educate, create doubt, ask patient to think about their substance use behavior and keep a diary.
Contemplation	Ambivalence	Risk and benefit analysis, raise consciousness, consider trial of abstinence, provide pamphlets.
Determination	Motivated to change	Assist in determining course of action, explore treatment resources, review family and social supports, set goals and a quit date.
Action	Engaged in change	Support and follow-up. Explore patient concerns and stressors.
Maintenance	Maintaining change	Identify and use strategies to prevent relapse, discuss "triggers" and "cravings," reassess support system.
Relapse	Ambivalent or motivated	Help renew process of change, understand relapse as a component of ATODA, reassess goals and support system, consider more aggressive treatment, explore "triggers" and "cravings."

From Prochaska and DiClemente[31]

sobriety. These groups empower family members and may even be the trigger necessary to force the patient into sobriety.

Members hold meetings or visit nearly every hospital in the nation. Health care professionals are encouraged to take motivated patients to a meeting or to arrange for a bedside visit by an AA member for patients wishing one. Clinicians and their patients can get a schedule of meetings or obtain informational pamphlets at the local AA central office for a small donation. Like any group interaction, 12-step meetings assume the personality of the participants, so patients should attend several until they find a group they like. Families can attend a support group, such as Al-Anon, regardless of whether the patient seeks help. The telephone number for AA is listed in the white pages of any phone book in the world. AA can assist physicians in contacting other 12-step programs.

THE ROLE OF THE HEALTH PROFESSIONAL

Health care professionals may become frustrated when dealing with substance misusers because there is no "antibiotic" to cure their illnesses.[30] Clinicians must make an effort to identify those who are emotionally ready to change their lives.

Alcoholics Anonymous teaches that people who are dependent on alcohol cannot be helped until they have hit "rock bottom"—that is, lost their health, profession, family, and friends and may be facing legal action. The concept of rock bottom can be understood through stages of change model (table).[1,2,31] The brief intervention process allows physicians to "raise the bottom," or to move the patient through the stages of behavioral change, thereby reducing substance misuse, improving health behaviors, or even entering treatment before health and social supports are lost.

CASE STUDY AND DISCUSSION

A 66-year-old man is admitted to a community hospital with resting pain in his lower left leg. His medical history includes a recent episode of pneumonia, hypertension, diabetes mellitus (controlled with diet), cardiovascular disease, and gastritis. His surgical history includes coronary artery bypass graft surgery and open-reduction internal fixation of his left ankle following a traumatic incident. The patient adds that he had also fractured his right ankle in a separate traumatic incident.

The patient is a retired business executive actively involved in community organizations. He is married and has two grown children with whom he has a strained relationship. The patient has never smoked or used illicit drugs; however, he has four to six alcoholic drinks per day. He does not think his alcohol consumption has any physical or social consequences.

The patient is pleasant, functioning well in society, but has many medical concerns. The amount of alcohol he drinks daily, coupled with his history of hypertension, gastritis, pneumonia, multiple trauma, and strained relationships, places him at risk for alcohol misuse. His primary physician reveals that the patient's breath smelled of alcohol during previous office visits, but no intervention was attempted.

The patient's wife is present during his admission history and physical examination. When the CAGE questionnaire is administered, the patient answers no to all four questions, but his wife nods in the affirmative after each one. When confronted with this discrepancy, the patient tries to minimize the physical and social consequences of his alcohol consumption. After being given some education on alcohol abuse and dependence, the patient is told he should stop drinking. He reacts with some animosity, but agrees to accept informational pamphlets and referrals.

The patient undergoes a successful left femoral-popliteal bypass graft revascularization. During his 5 days in the hospital, he participates in a detoxification protocol using oral chlordiazepoxide hydrochloride. Before discharge, he is given referrals to addiction medicine specialists.

Three months later, the patient is admitted to the hospital with claudication symptoms in his left leg. He says that his primary care physician is investigating his continued gastritis and that he is still drinking four to six alcoholic drinks per day. The patient is again instructed on alcohol misuse, particularly on the relationship between his continuing medical problems and his alcohol consumption. At his request, the patient is given an updated list of resources. A follow-up intervention note is recorded in his medical record.

Ultrasonography and angiography reveal that the distal portion of the patient's femoral-popliteal graft is occluded. He undergoes thrombectomy and is discharged home the following day without complications.

One month later, the patient telephones and says he has stopped drinking. He agrees to an office visit to establish goals and develop a strategy for maintaining sobriety. Consultation with an addiction medicine specialist is arranged, along with follow-up visits to monitor the patient's progress. The patient is highly motivated and has maintained sobriety for 6 months.

CONCLUSIONS

Improving the lives of those who misuse alcohol, tobacco, and other drugs is one of the most rewarding experiences in medicine. While in remission, they can greatly contribute to our society, as evidenced by the success of physician and other professional diversion programs throughout the nation.

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capsule

Why widowers drink more Few readers will be surprised that losing a spouse is associated with heavy drinking in older men (*Australian and New Zealand Journal of Psychiatry* 1999;33:740-747). An understandable reaction to the pain of bereavement, perhaps? Not according to one controlled study, which found that drinking was not linked to psychological distress. The authors suggest that recently widowed men drink more because their wives are no longer around to stop them.

capsule

Placebos for pin-pricks An anesthesiologist from Heidelberg has developed a placebo acupuncture needle that looks and feels like the real thing but does not penetrate the skin (*Pain* 1999;83:235-241). Armed with a reliable way of blinding patients in acupuncture trials, a team from the city's university tested acupuncture against placebo in rotator cuff tendinitis. The real thing worked better, suggesting that acupuncture's effects critically depend on puncturing the skin.

In the Public Eye

News and Features

Controversy erupts over reuse of "single use" medical devices

Fred Charatan, Florida

Hospital and clinic instruments are being reused despite their "single-use" designation. Vanguard Medical Concepts of Lakeland, Florida claims to have cleaned and resterilized instruments such as biopsy forceps and wires and balloons used for coronary or cardiac procedures.

Charles Masek, president of Vanguard Medical Concepts, said that his company has reprocessed more than 2.5 million devices–ranging from coronary angioplasty balloon catheters and orthopedic blades, burrs and bits to deep vein thrombosis sleeves and laparoscopic instruments. Vanguard is a founding member of the Washington-based Association of Medical Device Reprocessors.

The manufacturers of medical devices have said that hospitals are putting patients at grave risk to save money. "The real issue is patient safety," said Josephine Torrente, president of the Association of Disposable Device Manufacturers. "Until you prove otherwise, these devices are safe and effective for one use. After that, they're garbage."

Larry Kessler, director of the office of surveillance and biometrics at the Food and Drug Administration, said: "There are no products where we have significant evidence that there is immediate harm to the public health." His view is shared by William Jarvis, head of the infections and prevention branch of the hospitals' infection program, at the Centers for Disease Control and Prevention.

Despite this reassurance, many hospitals remain wary. "Given the fairly convincing evidence that high temperatures and caustic chemicals change the nature of materials, I'd

Vanguard Medical Concepts Inc

Reprocessing single use instruments: is regulation needed?

be leery of using redisposables," said J P Abenstein, chairman of the equipment subcommittee at the Mayo Clinic in Rochester, Minnesota.

The Food and Drug Administration has proposed a strategy designed to protect the public health by assuring that the practice of reprocessing and reusing single use products is based on good science. The administration would thus consider regulating third party processors of single use devices the same way as it has regulated the manufacturers of equipment.

Full details are available on the Internet at www.fda.gov.

International report reassesses ways to cut maternal mortality

James Ciment, New York

Deaths in pregnancy cannot be reduced by the existing method of targeting high risk women, says a study by the World Health Organization, the United Nations Population Fund, Unicef (the United Nations Children's Fund), and the World Bank. The study questions a number of long held beliefs about maternal mortality. Assessing 10 years of work in the field, the report (*Reduction of Maternal Mortality*) insists that "vertical, standalone" measures cannot alone effectively reduce the near 600,000 annual deaths caused by pregnancy and childbirth complications.

According to Koen Vanormelingen, a senior health adviser for Unicef and one of the report's authors, the existing prenatal care risk approach—which attempted to target women at high risk—"is not very effective in reducing mortality." The correlation between factors such as a history of obstructed birth, says Vanormelingen, is far from exact. "Any women is at risk and can suffer life threatening complications," he added.

Rather than focusing on high risk women, the report argues that the most effective means for reducing maternal mortality—usually caused by extensive haemorrhaging—is to assure that every woman has a skilled attendant at birth or, at the very least, access to essential obstetric services if there are complications. Moreover, says Vanormelingen, research behind the report finds that traditional birth attendants—once considered a useful substitute for trained midwives and doctors—"will not by themselves reduce maternal mortality."

Citing Sri Lanka as a case study, the report connects the south Asian nation's reduction in maternal mortality—from 550 to 30 per 100,000 births over the past four decades—to the fact that the once predominant practice of home births without trained staff in attendance had been replaced by skilled birth attendants in over 85% of the cases.

The report also notes that "the low social and economic status of girls and women is a fundamental determinant" of high maternal mortality in many developing countries.

Furby not guilty as "charged"

Greg Basky, Saskatoon, Canada

It seems now that Furby, a stuffed toy with a computer chip inside, which was vilified for interfering with medical equipment, does not affect medical machinery after all. An investigation by Health Canada (the government's health ministry), published recently in the *Canadian Medical Association Journal* (1999; 161:971), revealed that the electric and magnetic fields given off by the ear wiggling, eye blinking, fuzzy creature are about 70 times weaker than those emitted by a digital telephone and are "very unlikely" to affect the performance of medical devices, say the study's authors.

The furry furor started last January, when Canadian media outlets jumped on reports that the Royal Hospital for Sick Children in Glasgow, Scotland, had apparently banned the toy from its intensive care unit. No Canadian hospitals barred visitors bearing the creature.

Damian Dovarganes/AP photo

Furby: innocent of all charges of interference

In response to media coverage and calls from biomedical engineers, researchers in Health Canada's Medical Devices Bureau measured the effect of Furby on 10 devices made before 1993 and known to be vulnerable to interference from cellular phones. These included incubators, automatic external defibrillators, syringe pumps, infusion pumps, electrocardiogram monitors, ventilators, renal dialysis machines, and pacemakers.

Three other machines (the Holter monitor, an anesthetic system, and an ultrasound system) produced before 1996 were also studied because of concerns about possible susceptibility to electrical interference.

Furby was given a clean bill of electromagnetic health, as it did not adversely affect the functioning of any of the devices tested at any distance. While the chattering creature did generate electric and magnetic fields in its active mode (it awakens from hibernation in response to sound and light), these were too weak to pose any threat to hospital equipment.

Dr Kok-Swang Tan of Health Canada admits that during the testing he did get some "strange looks from colleagues who wondered why I was playing with a Furby in front of medical devices."

Missouri fines Internet pharmacy

Douglas Carnall, London

An Internet pharmacy that supplied prescription only drugs without appropriate medical supervision has been fined $15,000 by the state of Missouri and will have to reimburse all its customers for any charges. As is typical for such Internet pharmacies the site concentrates on supplying the so-called lifestyle drugs such as sildenafil (Viagra), finasteride (Propecia), orlistat (Xenical) and bupropion (Zyban).

The site (http://thepillbox.com) is based in San Antonio, Texas, and its owner, William Stallknecht, stood as a Libertarian party candidate for the US House of Representatives in 1998. The case against the pharmacy was brought by a pregnant assistant attorney who found that she was able to order Propecia (although the drug is contraindicated in pregnancy) after filling out an online questionnaire.

Guidelines of the American Medical Association declared this practice unethical earlier this year (www.bmj.com/cgi/content/full/319/7204/213). "We picked a major operation with significant resources and took them on, making sure that they are fully represented," said Missouri attorney Jay Nixon, "and shut them down as a clear signal to everyone else out there that this is illegal conduct in our state" (www.slfp.com/072399city.htm).

Customers at thepillbox.com website paid $85 for an online "consultation" before ordering drugs, but the Texas doctor who was writing the prescriptions, James Reed Williams, has agreed that he will no longer sign prescriptions for Missouri residents.

Doctors feel the pressure from direct to consumer advertising

David Spurgeon, Quebec

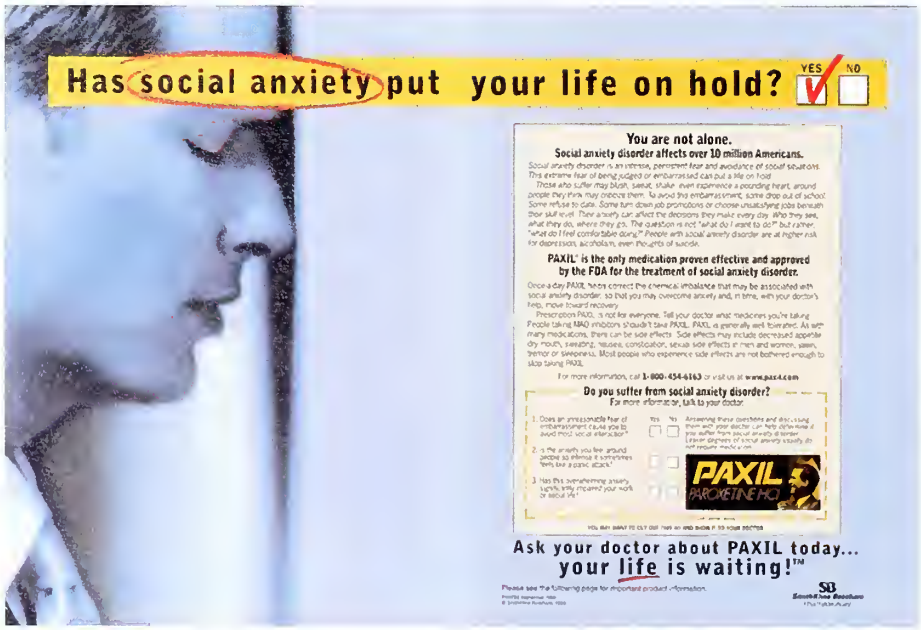
Most physicians whose patients asked them about drugs they had seen advertised in the media felt under pressure to prescribe them, according to a telephone poll reported at the annual meeting of the American Association of Pharmaceutical Scientists. In 30 to 36% of such cases, the physicians gave in to the pressure, even when the drug in question was not their first choice.

The poll was conducted among 199 primary care doctors practicing in Ohio and Pennsylvania during January and February 1999, including those who were described as high prescribers of statins. Respondents were offered an honorarium of $75 for participating. Respondents to the poll, which was carried out by Benjamin Banahan, professor of pharmacy administration and John Bentley, assistant professor of pharmacy administration, at the University of Mississippi, indicated that on average five patients a week asked them to prescribe a specific product, and 30% of the time they did so.

The physicians said that television advertisements were the most frequent source of their patients' information (77%); print advertisements were next (51%), followed by television news stories (49%) and print news stories (48%). More than half (52%) of the doctors thought that the information in prescription advertisements was only partially accurate, and 42% thought it was mostly accurate.

Altogether, 91% of the physicians who responded reported that they felt under pressure to prescribe products patients asked them about: 38% reported "very little" pressure, 47% "a little" pressure, and 6% "a lot" of pressure. The American Medical Association reversed its stand opposing direct to consumer advertising in 1992.

Professor Banahan said that physicians today were more likely to respond to pressure from patients to prescribe than they were in the past. Those who responded to pressure to prescribe a drug that was not their first choice said that they considered that the drug they ended up prescribing was acceptable. The project was supported by a research grant from the R W Johnson Pharmaceutical Research Institute, a research arm of Johnson and Johnson.



Health situation in former communist bloc is dire, says Unicef

James Ciment, New York

Marking the tenth anniversary of the fall of the Berlin Wall, the United Nations Children's Fund (Unicef) has issued a report on the social ramifications of the transition to market economies in the former communist bloc.

The report, *After the Fall: the Human Impact of Ten Years of Transition*, states that women and children have suffered especially hard. Although the report chronicles a host of economic and social problems, its findings on health are particularly disturbing, especially on the reappearance of so called poverty diseases.

The number of cases of diphtheria in Russia and Ukraine rose from about 1900 cases in 1990 to 43,000 in 1998. Poliomyelitis, which had been virtually eliminated in the former Soviet Union, has reappeared in the Central Asian Republics and Ukraine.

Tuberculosis is also on the rise in the western parts of the former Soviet Union, with children accounting for over 10% of new cases. Cases of sexually transmitted diseases are increasing as well.

Sean Sprague/Panos Pictures

"I want to eat"—poverty is hitting Russian children hard

Syphilis, practically eliminated by 1990, has re-emerged in the former Soviet Union, with some 221 cases per 100,000 people in 1998, more than 100 times the average of the European Union.

Meanwhile, the number of cases of HIV infection in the western part of the former Soviet Union had climbed from 30,000 in 1994 to 270,000 by the end of 1998. "It is safe to say," the report argues, "that these areas now face an epidemic of HIV and AIDS."

Several factors are behind these disturbing trends, the reports' authors conclude. Although some countries in the region have fared better than others in terms of health statistics, every single one has cut its spending on health care over the past 10 years. Meanwhile, the despair caused by economic collapse has led to soaring drug misuse, alcoholism, injury, and suicide rates among young people. In the Czech Republic, for example, teenagers aged 15 to 19 were twice as likely to end their own lives in 1994 as they were in 1990.

Asked to cite any encouraging signs in the region, Patrick McCormick, a spokesperson for Unicef's Research Center in Florence, which published the report, said, "there is a freedom now." But, he added, "children are paying too high a price for that freedom and they are not in a position to benefit from it."

Big health insurer gives physicians final say in treatment

Fred Charatan, Florida

The United Health Group, the second biggest managed care company in the United States, has told physicians that they will no longer require prior approval before carrying out most medical and surgical procedures. It is closing its utilization review division, which runs its prior authorization procedures.

The group—which insures 14.5 million people, including 8.7 million in managed care units—found that requests for approval of care were almost always granted; it had been denying coverage in fewer than 1% of all precertification decisions.

The company said that it was taking the final say out of the hands of the managed care bureaucracy and returning it to the treating physician, because requiring doctors to get prior authorization was costing more money than it saved. The division cost $128m to run last year.

The group's decision was possible, in part, because the company is one of the few large health care plans that has succeeded in using computers to track the behavior of its 42,000 doctors in 17 states and compare costs and patient outcomes. These include such indicators as whether doctors prescribed beta blockers after heart attacks and ordered mammograms to women aged over 50. "That quality measurement program is the reason we felt comfortable doing this," said Lee Newcomer, the group's medical director.

Thomas Reardon, president of the American Medical Association, said: "This action is historic and represents a long overdue victory for America's patients and the care they receive."

Susan Pisano, spokeswoman for the American Association of Health Care Plans, said that utilization review still had a role in holding down unnecessary procedures. "It has the effect of saving money, but the primary consideration is to reduce the dangerous level of variation we see in a lot of procedures."

She cited evidence that operations such as hysterectomies were much more likely to occur in some geographic regions than others. Some health care analysts said that, overwhelmed by consumer and regulatory backlash (and faced with a presidential campaign in which managed care is a leading issue), the industry was beginning to change.

West of the Rockies

Speaker's Corner

Angel's stigma

DJ, the third year medical student, told me about the patient in room four: Angel, an 18-month-old girl whose mother had noticed that she felt warmer than usual last night. Angel had a temperature of 38.3°C and rhonchi, so DJ and I went through the list of usual suspects. Before we walked down the clinic hallway to room four, DJ added that Angel was the only child of this 40-ish woman. She'd told DJ about using drugs in her past, becoming clean, and winning back custody of her daughter.

We walked into the room together to find Angel sound asleep face down on her mother's ample chest. The baby's hair was braided into many neat little cornrows. Her left hand was slowly loosening its grip on a half-empty bottle of milk, which had come to rest in the crook of her mother's elbow. Mom was wearing a small, dark green felt hat with the brim turned up in front. She wore no make-up except some pink lipstick.

As we talked, I noticed the child's noisy but unlabored breathing. I untied the flimsy, bright yellow hospital gown to make room for my stethoscope on her back. A bluish oval mark, about 1 by 2 centimeters, just to the right of her spine caught my eye. I ran my fingers over it and turned to DJ.

"Do you know what this is?" I asked him. (It had been an unusually quiet morning and I was looking for teaching points.)

DJ hesitated: "A birthmark?"

"Right. This kind is called a Mongolian spot. I went on to explain to him why this one was so typical, and then I became aware that Angel's mother was staring at me wide eyed.

"I always thought it was a mark they put on my baby in the hospital," she said.

I must have looked confused. "Because I was an addict when she was born." She paused but continued when she realized I did not understand. "I thought the nurses took some ink and put a mark on her so people would know."

"You thought they did that in the hospital nursery?" Now I was the wide-eyed one.

She explained the way "they all talk about the addicts" on the maternity ward. She told us about having the baby taken away in the hospital, then working to earn her back. And she kept returning to the blue stain on Angel's back. It just always seemed obvious to her that the nurses would want to brand Angel as an "addict's baby".

> "I thought the nurses took some ink and put a mark on her so people would know."

Now that she'd heard a different explanation, complete with a medical-sounding name, relief washed over her face. She happily discarded her interpretation and embraced mine. Next week, she said, she'd tell the people at Narc-Anon about this.

DJ and I finished examining the now-awake Angel and made a plan for dealing with her respiratory infection. No, she probably won't be all better for a couple of days. Yes, she should stay home from day care tomorrow (an early intervention program—Mom hates for her to miss a day). The fever might go up and down . . . call us if she's having trouble breathing . . . the nurse will come in and show you how to take her temperature . . .

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COMMENTARY

Addiction is a treatable disease, not a moral failing

Despite the fact that it was long ago acknowledged that alcohol and drug dependency are diseases (the AMA accepted this a quarter of a century ago), the everyday world of medical practice often reflects the stigmatizing attitudes of medical personnel reported in Angel's story. However, Lozano's article also illustrates the power of medical staff to intervene positively in addictions, and her encounter with Angel's mother stimulates a number of observations.

Individual clinicians can have a great impact on substance abuse through their role in identifying, treating, and preventing the disease. A review of 44 studies of brief interventions in healthcare settings showed that even brief interactions with medical personnel have significant effects on patients' drinking.[1] The vulnerability of a patient in a medical encounter and the authority of the medical provider can be harnessed for the immediate and long-term benefit of the patient, whatever the level of severity of substance misuse.

Clinicians and their patients are often bound by the same unscientific, shaming beliefs about substance misuse; these beliefs create barriers to treatment.[2] Angel's story conveys her mother's sense of being stigmatized by healthcare providers because of her illness. Lozano's intervention is an example of knowledge dispelling both stigma and pain. Physicians' fear of offending patients often leads to their avoidance of making the diagnosis of substance misuse or dependence.[3] Just as knowledge about the Mongolian spot allowed Angel's mother to free herself from her mistaken belief, so too providers can benefit from casting aside unscientific and damaging beliefs regarding substance misuse. Patients and providers need to know that addiction is a treatable disease not a moral failing.[4]

The scope and impact of substance misuse across society are profound. Approximately 1 in 5 outpatients seeking primary care and 1 in 4 hospital patients are dependent on alcohol; yet, only about 1 in 7 people who are dependent on alcohol are ever treated.[5] A study at a number of mainly urban hospitals found that approximately 1 in 9 infants evaluated had been exposed to illegal drugs in utero.[6] Unintended pregnancies are one of the consequences for female substance misuser who exchange sex for drugs. Although Angel's problem is far from unique, her mother's—"a woman focusing all her energy on trying to do things right"—experience of an escape from addiction and restoration of the mother-daughter bond is not the norm. Substance misuse is underidentified and undertreated; individual clinicians have the power to change this.

> Substance misuse is underidentified and undertreated; individual clinicians have the power to change this.

Lozano's encounter with Angel and her mother shows that substance misuse is not only treatable but is also preventable. Children of current and former substance misusers are at high risk of themselves abusing substances.[7] Will Angel follow in her mother's footsteps as genetic, psychological, social, and cultural factors often dictate? Or will some intervention occur to prevent her progression to addiction? In a 1-year study of 445 adolescents receiving routine care from 119 family practitioners, 62.5% of the adolescents did not receive any health habit counseling (that is, risky sexual behavior, exercise, tobacco, alcohol and other substances). The authors note this " . . . clearly represents a missed opportunity for preventive counseling." [8]

The clinicians in Angel's story have moved the process of treatment, and prevention, forward by educating her mother. Although the medical setting is an ideal context for intervening to stop the progression of substance misuse, medical personnel often fail to act. Clinicians report that they lack the knowledge, skills, attitudes, and practical experience to address substance misuse. Physicians rate doctor-patient communication on substance misuse as extremely important but rate their own related training and skills dramatically lower; cross-cultural and gender issues add to the challenge.[9] Training programs for health professionals devote too little time to substance misuse, leaving clinicians ill equipped to deal with this widespread health problem. Better training will result in physicians who are better able to prevent, identify, and treat substance misuse in the future—but what about now? Angel's story illustrates that, in the arena of substance misuse, the beliefs and actions of individual clinicians matter.

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Wrestling with the covenant

This week, I am our practice's designated pediatrician to see all of the hospitalized patients. My job is to see all the newborns for our group until I hand over this responsibility the following week. Most of the parents I meet I won't see again unless they choose me as their pediatrician.

Walking into the nursery, I check the assignment board to see what my duties will be today. I ask the nurse in charge, "How many circs today?"

She answers, "Just one. Baby Boy Kessel."

I'm glad there is only one. I do not enjoy performing circumcisions. I don't love procedures, anyway, and I've always been hesitant about doing this to nonconsenting newborns. Most of the world's males do fine with intact foreskins.

In the back of the nursery, "Jim Kessel" (not his real name) waits with his infant boy. I introduce myself and congratulate him on the birth of his son. Jim asks, "Do you use anesthetic for the circumcision?" Parents always ask this question. The truth is that many kids cry anyway, even when we know we hit the right spot with the lidocaine. I try to finesse.

"Absolutely," I say. "I put a little lidocaine locally just under the skin right here at the base of the penis. But I also like someone, such as yourself, to put your finger in his mouth. I think the sucking is just as important."

We start setting up for the circumcision. He signs the consent form, and I place the infant in the leg restraints on the circumcision board. This board is a piece of white plastic with a smooth depression in the shape of an infant. The child fits entirely in this groove, and the legs are kept still with white adhesive straps.

"Baby Sam" starts to cry with the placement of the restraints but settles down quickly as he endeavors to bring a meal into his mouth from dad's finger. I start to administer the anesthetic.

"I hope you don't mind if I look away," Mr Kessel says. "I've seen one or two of these, but I don't want to see my own son's."

I ask, "Was it a home circumcision? A bris?"*

"Yes," he answers. "I've seen a few, but I never was comfortable with it."

Jim's remark makes me recall all the doubts I've been struggling with. Why do we have to remove a perfectly normal piece of skin in these kids? True, I occasionally see infected foreskins in older children, which cannot happen if the foreskin is removed at birth. But, I wonder, when we remove a foreskin, do we remove something else? What are we taking away from a boy by doing this?

As I inject the anesthetic over a period of 10 seconds, Baby Sam cries out intermittently. He clearly feels the medication, but this sting should quickly dull. I am reminded of the new studies that are showing some benefits of EMLA (Lidocaine-prilocaine) cream and of the use of a ring block of lidocaine. I still use the dorsal nerve block, mostly because that is how I was trained. The lidocaine is now in.

I ask, "Are you Jewish?"

"Yes," he answers, "but my wife is Catholic, and if I weren't Jewish, I wouldn't even be thinking of doing this. It's really more the grandparents who are pushing it."

"I know what you mean," I say. "I'm Jewish, and I have some discomfort with the procedure. But I've done a lot of bris's, and it's amazing how powerful the tradition is to the family."

Yet, as powerful as it is in Judaism, I have non-Jewish families who definitely want circumcision for all sorts of "legitimate" reasons. They say things like, "We want him to look like his dad" or "It's easier to take care of when it's circumcised" or "The grandparents want it."

"You know, Jim," I say. "We don't have to do this. I want you—not your parents—to want to circumcise your child."

"No, I have to," Jim responds. "I can't be the one who breaks the tradition."

"Which tradition?" I ask. "The tradition to circumcise, or the tradition to have a bris?"

He answers, "To circumcise. But I suppose there is a religious part of this as well."

"Well," I reply, "if you would like me to, I can say the blessing when we come to the right time."

Jim looks in Baby Sam's eyes and says, "If you want."

I'm not sure whether he truly understands me, but I let the moment pass and drape the infant's penis with a sterile cloth.

I touch the foreskin with a forceps. There is no cry or grimace. The anesthetic has taken effect. Baby Sam continues to suck on Jim's finger as I take a thin hemostat and start to separate the foreskin from the underlying glans penis.

I ask Jim, "How does your wife feel about it?"

Jim was looking away as he spoke. "She really has left it up to me. You see, ordinarily, I feel that we shouldn't mess with nature. Maybe it has a purpose?"

I swallow hard as I expose the glans completely. I'm already halfway through this. Should I continue? He's asking all the right questions.

I say, "I agree with you that there is at most a marginal medical benefit, if any, to circumcision, so a reason to do it would be cultural or religious and not medical. But to Jews, this is the mark of the covenant that God made with Abraham, and it hasn't changed in 3,000 years." I describe to him how, with the rise of reform Judaism in the 1800s, there was a movement to abolish circumcision. But while keeping kosher and wearing skullcaps were deemphasized, abolishing circumcision was felt to cut off the connection between God and the Jewish people. This radical movement died out, and the tradition to circumcise was maintained.

I continue, "How powerful is it in today's Jewish community? One of my Jewish female colleagues has said that it would be very difficult for a Jewish girl to date a Jewish boy who was uncircumcised."

* Bris is short for Brit Milah, which is Hebrew for "covenant of circumcision." During this religious ceremony, a circumcision is performed and the community welcomes the child to Judaism. The child is Jewish at birth, but the procedure with blessing demonstrates a commitment by the parents to raise the child in the Jewish tradition.

Jim answers, "Well, that's why I feel I have to do this. I want to give him the choice to go in whichever direction he wants."

I think to myself how ironic it is that an irrevocable procedure can be perceived as creating choice.

I place the clamp on the penis and separate the glans from the foreskin. Baby Sam cries out briefly as he feels the sting of the circular clamp compress the foreskin and its nerves at its base. He sucks more vigorously as he loses all feeling in his foreskin. The clamp is tightened.

"All right," I say to Jim. "The clamp is on, and I'm ready to remove the foreskin. This is where I would ordinarily say the blessing."

Jim is silent. With scalpel in hand, I start to cut. I feel that I have to make the offer again.

"Would you like me to say the blessing?"

Jim is still looking at Baby Sam as he caresses the fine hair on the baby's scalp.

"Yes. Please," he answers.

"*Boruch atah Adonai elohaynu melech haolam asher kidshanu b'mitzvotav vitzyvanu al ha milah.* [We praise You, Adonai our God, Sovereign of the Universe, who sanctifies us with commandments, and commands us regarding circumcision.]"

And then Jim says, "Amen!"

As I finish removing the foreskin, all is quiet. Jim continues to look away while his finger offers comfort in the baby's mouth and his other hand wipes the tears from his own eyes.

I show Jim how to dress the newly exposed glans penis and then take the baby out of the restraints to wrap him up for his bassinet. As I hand him to Jim, he holds his infant son securely and with tenderness. Jim thanks me, takes him back to Mom, and I leave to see the next child.

I suppose it is possible that the power of this ritual is not just in the procedure. It might be the higher plane reached by the juxtaposition of a new father offering his newborn, in the tradition of his ancestors, a permanent mark on a life-giving organ and a blessing over the entire process. Or it might just be a procedure that separates a newborn from his foreskin forever.

George Bridges/AP

The Stop Infant Circumcision Society demonstrates against the practice

A week later, I receive a letter from Jim's wife:

> We had struggled with the decision to do the circumcision, but since I'm not Jewish and Jim is, I thought it would be important to make sure that Sam could have as strong a tie as possible to his father's family and heritage. For these reasons, I thought it was very special that you said the prayer. It makes me feel wonderful to know that he received a blessing and not just a surgery. Thank you so very much.

I now accept that medical science may never be able to prove whether the foreskin is a piece of prehistoric human culture that now exists only as a reservoir of infection, or whether it is a magical piece of erectile tissue that aids in sexual performance and protects the underlying glans penis.

I also know that in the Jewish tradition, none of this matters. Here, the foreskin is a kind of barter. We remove foreskin by this procedure. We also take away whatever magical powers a foreskin possesses, but that skin is traded for a connection with a culture infinitely more powerful in its achievements and a heritage infinitely more durable in its longevity.

Ross DeHovitz

Palo Alto Medical Foundation
300 Homer Ave
Palo Alto, CA

Correspondence to:
Dr DeHovitz
rdehovitz@pamf.org

100 YEARS AGO

Advances in technology in 1900 raised the question: is electric light injurious to the eyes? A physician in California warned that the public was "greatly in need of correct information in regard to the injury resulting from the improper use of electric lights . . . The injurious influence of these glowing filaments cannot be avoided when the lamps are used with clear glass globes." His conclusion: "It is difficult to see how the lights can be adapted to general illumination while obviating their harmful effect."

E Briggs, Sacramento, CA

Transactions of the Medical Society of the State of California, 1898

Letter from the Southwest

A declaration of interdependence

Mark Carroll, Flagstaff, AZ
mcarroll@infomagic.com

When, in the interest of wellness, it becomes necessary for healers from multiple traditions to renounce the narcissism eroding their collective health care, and to re-assume, in the midst of growing interpersonal greed, the selfless and service-oriented station to which nature and its Creator call them, a deep empathy for sick people compels them to declare their shared vision of healing.

We hold these truths to be self-evident, that all people are born to an interdependent whole; that illness embodies isolation from the whole; that ill people are entitled to kindness, compassion, and blameless charity in their pursuit to re-experience the whole. That to help ill people return to the whole, hospitals and health care systems are instituted among communities, deriving their sacred authority from the confidence of the sick; that whenever any hospital or health care system recklessly segregates the sick, it is the obligation of healers to change or abandon it, and to organize new centers and systems of healing that remain faithful to the basic precepts of compassionate caring and interdependence. Convention and financial comfort, no doubt, will prevent the radical revision of ailing medical systems without just cause. Nonetheless, when a record of spiritless policies clearly evidences apathy instead of empathy in the health care system, it is healers' moral duty to disavow such callous indifference, and refocus professional attention on the heart and soul of caring. Such has been the sad witness of contemporary physicians and healers from many traditions; and such are now the circumstances that press them to reassert the primary place of charity and kindness in the healing professions.

The recent history of the current health care system is one of repeated assaults against the commitment to compassion. To demonstrate this, let harsh realities be reviewed by a disillusioned world:

- The health care system places money before people. Witness the emphasis on consumerism rather than caring, the refusal of some facilities to treat the indigent and the uninsured, the motivation of corporations to profit from illness and despair.
- The health care system studies instead of believes. Notice how physicians invoke science to prove the worthiness of compassion, how researchers search for statistics that social support improves outcomes, how concerns over resource allocation have silenced the spirit of charity in contemporary healing.
- The health care system seeks control over diverse traditions, not integration with them. Acknowledge that much interest to integrate "alternative" healing practices followed surveys showing widespread use of such practices, that some new clinics juxtapose healing traditions without considering whether different traditions should be integrated, that academicians subject alternative traditions to standard statistical analysis when assessing outcomes and efficacy.
- The health care system embraces an ethic of selfish separation, not one of community and interdependence. See the distrust doctors harbor of "non-compliant" patients, the personal frustration physicians express when illnesses do not respond to prescribed treatments, the uncompromising drive of conventional medicine to label individuals diseased without due attention to other, more social senses of being.

Although aware of these transgressions, we have, thus far, only feebly petitioned for change. Disaffection with the current system causes many healers to leave their professions rather than publicly advocate for improvement. This inability to stridently defend what we should hold most dear questions our commitment to sick people and healing.

Nor have we shown great vision in shaping a model of integrated care for ill people. We should have decried the incursion of business into alternative health care, asking our leaders, and ourselves, why sick people seek alternative health care instead of how much they are willing to spend on it. Our innate sense of compassion, not our learned savvy for consumer trends, must guide us in efforts to integrate our diverse histories. We have, for too long, grown deaf to the voice of suffering rising from the depths of illness. We must, if we are to aspire to good and honorable healing, relearn the art of listening, and reaffirm our fundamental commitment to caring.

We, therefore, representatives of the moral outrage of the healing professions, recognizing the urgent need to defend our histories of compassion and selflessness in healing, do solemnly publish and declare that sick people, healers, and healing traditions are interdependent; that kindness and charity are not hypotheses to be proven but values to be cherished; that healing rituals rooted in culture are not techniques to be integrated but heritages to be respected; that all people, no matter their financial fortunes, are entitled to compassion when they become sick; and, that all healers, no matter their traditions, are responsible for helping the sick in their journey to re-experience the whole. And, for the support of this declaration, with a resolute reverence for the presence of divine mystery in our lives, we pledge to those who are sick, and to each other, our hearts, our histories, and our sincere humility.

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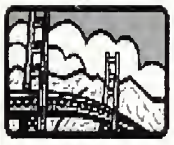

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All courses listed have been certified as meeting the criteria for Cat 1 of the ArMA CME Certificate and the AMA Physicians Recognition Award. To list Cat 1 CME programs, please send information to Arizona Medical Association, 810 West Bethany Home Road, Phoenix, AZ 85013; or phone (602) 246-8901.

Brochures and registration forms are available from the contact person or organization sponsoring the program.

FEBRUARY 11-13, 2000: Issues in Women's Health. Hilton Tapatio Cliffs, Phoenix, AZ. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756, Fax (303) 798-5731; www.mer.org.

FEBRUARY 13-17, 2000: International Congress 2000 on Endovascular Interventions. The Phoenician, Scottsdale, AZ. 20 hrs Cat 1. Contact Erika Scott, Con (602) 266-2200; Fax (602) 265-8885; escott@azheart.com; www.endovascularcongress.org.

FEBRUARY 18-20, 2000: First Annual Pediatric Integrative Medicine Conference—Incorporating Evidence-Based Complementary/Alternative Medicine into Clinical Practice. Westin La Paloma Hotel, Tucson, AZ. 18.75 hrs Cat 1. Contact University of Arizona Health Sciences Center, (520) 626-6858; pedsimc@peds.arizona.edu; www.crc.arizona.edu/pimc2.htm.

APRIL 14-46, 2000: Dermatology for the Non-Dermatologist. Hilton Tapatio Cliffs, Phoenix, AZ. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

CONTACT INFORMATION

Mayo Clinic-Scottsdale—Contact Postgraduate Courses, Mayo Clinic-Scottsdale, (602) 301-7447.

U of A—Contact University of Arizona College of Medicine, Arizona Health Sciences Center, Tucson, AZ 85724. (520) 626-7832; (800) 328-5868.

CALIFORNIA, HAWAII, AND NEVADA

All courses and meetings listed are approved for Cat 1 credit toward the CMA Certificate in CME. To list accredited courses here, please send information at least two months in advance to Paulette Richardson, Continuing Medical Education, California Medical Association, PO Box 7690, San Francisco 94120-7690; or phone (415) 882-3387. For more information on accreditation or certification, please write to the above address.

CARDIOLOGY

JANUARY 29, 2000: Heart Failure 2000. University of Southern California at Los Angeles Marriott Hotel, Los Angeles, CA. 5 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

FEBRUARY 7-11, 2000: The 15th Annual Cardiovascular Conference at Hawaii. American College of Cardiology. 16 hrs Cat 1. Contact Registration Secretary (800) 253-4636 ext 694; Fax (301) 897-9745.

FEBRUARY 10-13, 2000: Patho2000—The 20th Annual San Diego Cardiothroracic Surgery Symposium: Cardiothoracic Surgery Including Perfusion. San Diego Marriott Hotel and Marina, San Diego, CA. Contact Lil Wagner, (858) 541-1444; Fax (858) 541-1447; lilw213@mindspring.com.

APRIL 14-16, 2000: Coronary Heart Disease Update. Bally's, Las Vegas, NV. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

CRITICAL CARE

FEBRUARY 28-MARCH 3, 2000: Critical Care Medicine. USC at Caesars Palace Hotel, Las Vegas, NV. 27 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

EMERGENCY MEDICINE

FEBRUARY 13-18, 2000: Emergency Medicine: 2000. UC Davis Health System at Hyatt Regency Lake Tahoe, Incline Village, NV. 24 hrs Cat 1. Contact: CME UC Davis, (916) 734-5390.

FEBRUARY 28-MARCH 3, 2000: 38th Annual Symposium on Critical Care, Trauma and Emergency Medicine. USC at Caesars Palace Hotel, Las Vegas, NV. 27 hrs Cat 1. Contact: Associate Dean, USC Postgraduate Medicine (323) 442-2555 or (800) USC-1119.

MARCH 5-10, 2000: 20th Annual Mammoth Mountain Emergency Medicine Conference. California Chapter of the American College of Emergency Physicians, Medical Conferences, Inc. and American College of Emergency Physicians at Mammoth Lakes, CA. 18 hrs Cat 1. Contact Dan Abbott, M.D., (949) 650-4156.

MARCH 20-21, 2000: High Risk Emergency Medicine. Center for Emergency Medical Education at Harrah's, Las Vegas, N.V. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

FAMILY PRACTICE/PRIMARY CARE

FEBRUARY 6-11, 2000: Nevada Academy of Family Physicians 32nd Annual CME/Ski Meeting. Nevada AFP at Harvey's Resort Hotel/Casino, Lake Tahoe, NV. 35 hrs Cat 1. Contact Debi L. Bradley, (775) 826-5100; Fax (775) 826-4475.

NOTICE

State Associations should send their CME listings for publication to:

Catherine Nancarrow, Editorial Manager,
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MARCH 29-31, 2000: Annual Review in Family Medicine: Controversies and Challenges in Primary Care. UCSF at The Cathedral Hill Hotel, San Francisco, CA. 16 hrs Cat 1. Contact Julia K. Engleton, (415) 476-5250.

NEUROLOGY

MARCH 10-12, 2000: Neurology for the Non-Neurologist. MGM Grand, Las Vegas, NV. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

OB/GYN

FEBRUARY 19-25, 2000: Perinatal Medicine. USC at Westin Maui, Maui, HI. 20 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

FEBRUARY 23-27, 2000: 17th Annual UC Davis Obstetrics and Gynecology Conference. UC Davis at Harveys Lake Tahoe, S. Lake Tahoe, NV. 16 hrs Cat 1. Contact: CME UC Davis (916) 734-5390; web.ucdmc.ucdavis.edu/edu.

SURGERY

FEBRUARY 3-5, 2000: Colon and Rectal Surgery—The Third Millennium. USC at Ritz-Carlton Huntington Hotel, Pasadena, CA. 15 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

MARCH 15-18, 2000: American Association of Ambulatory Surgery Centers, 21st Annual Meeting: Medical, Regulatory and Economic Issues Affecting Ambulatory Surgery Centers. Newport Beach Marriott Hotel, Newport Beach, CA. Contact Karen Morgan, (760) 751-8841; Fax (760) 751-8842; karen@amainc.com.

GENERAL/MULTIDISCIPLINARY

JANUARY 27-30, 2000: Medicine Meets Virtual Reality 2000—Envisioning Healing: Interactive Technology and the Patient-Practitioner Dialogue. Aligned Management Associates, Inc. and UC Irvine at Newport Beach Marriott Hotel, Newport Beach, CA. Contact (860) 447-9767; Fax (860) 444-0362; westwood@uconect.net; www.amainc.com.

FEBRUARY 4-5, 2000: 18th Annual UC Davis Infectious Disease Conference. UC Davis at Sacramento Hilton Inn. 11 hrs Cat 1. Contact: CME, UC Davis (916) 734-5390; web.ucdmc.ucdavis.edu/edu.

FEBRUARY 4-6, 2000: Managing Respiratory Diseases. MGM Grand, Las Vegas, NV. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

FEBRUARY 24-29, 2000: Esophageal & Foregut Disorders. USC at Hyatt Regency Hotel, Maui, HI. 27.5 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

FEBRUARY 29-MARCH 5, 2000: 9th Annual Winter Physician Assistant Board Review. USC at Pasadena Hilton Hotel, Pasadena, CA. 30 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

MARCH 1-10, 2000: 68th Annual Postgraduate Convention. Loma Linda School of Medicine at Loma Linda University, Loma Linda, CA. 27 hrs Cat 1. Contact: (909) 558-4633; AACONVENTION@USA.NET.

MARCH 2-4, 2000: The Fifth International Conference on Continuous Renal Replacement Therapies. Hotel Del Coronado, Coronado, CA. Contact Shirley Kolkey, (619) 299-6673; Fax (619) 299-6675, c-c-m@worldnet.att.net.

MARCH 3, 2000: Diabetes Update: 2000. UC Davis at Doubletree Hotel, Sacramento, CA. 7 hrs Cat 1. Contact: CME, UC Davis (916) 734-5390; web.ucdmc.ucdavis.edu.edu.

MARCH 3-5, 2000: Medical Review Officer Training Course. American Society of Addiction Medicine at Marina Del Rey, CA. 19 hours Cat 1. Contact: ASAM (301) 656-3920; www.asam.org.

MARCH 7-14, 2000: Diagnostic & Therapeutic Skills in Internal Medicine. USC at Mauna Kea Beach Hotel, Kameula, HI. 27 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

MARCH 26-30, 2000: Issues in Women's Health. Maui Marriott Resort, Maui, HI. 18 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

MARCH 31-APRIL 2, 2000: Managing Respiratory Diseases. Hyatt Regency Alicante, Anaheim, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

APRIL 6-7, 2000: 8th Symposium on Clinical Trials: Design, Methods, and Controversies. University of California, San Francisco—Laurel Heights Campus. 12 hrs Cat 1. Contact Office for CME (415) 476-4251, inquire@ocme.ucsf.edu.

APRIL 12-14, 2000: Putting Evidence-Based Medicine into Practice. UCSF, wjm and Kaiser Permanente at UCSF, Laurel Heights, San Francisco, CA. Cat 1. Contact UCSF Department of Medicine, CME; (415) 476-5208.

APRIL 13-15, 2000: 33rd Annual Advances and Controversies in Clinical Pediatrics. UC San Francisco at Ritz-Carlton Hotel, San Francisco. 16 hrs Cat 1. Contact: UCSF Registration Office (415) 476-5808.

APRIL 14-15, 2000: Update in Diabetes. USC at Disneyland Pacific Hotel, Anaheim, CA. 12 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

COLORADO

To list CME programs here, please send information at least two months in advance to: Mr Robert L. Kennedy, Denver Medical Society, 1850 Williams Street, Denver, CO 80218; or telephone (303) 377-1850. Brochures, course information, and registration forms are available from the contact person or organization.
Tuesday Noon Conferences—**Various Topics in Medicine.** Lutheran Medical Center, Wheat Ridge. Contact Jean A. Kline, (303) 425-2951.
First Wednesday of Each Month—**Various Topics in Neurology.** Colorado Society of Clinical Neurologists. Contact Colorado Society of Neurologists, (303) 449-3566.
Second Wednesday of Each Month—**Cardiovascular Education Series.** St Anthony Hospital at St Anthony Hospital, Denver. Contact Rose Powell, (303) 629-3678.

JANUARY 30-FEBRUARY 3, 2000: Clinical Diabetes and Endocrinology in 2000. Bedford Conference Center, Aspen/Snowmass, CO. 21 hrs Cat 1. Contact Amy Muller, Medical Education Resources; (800) 421-3756 or (303) 798-9682; Fax (303) 798-5731; mer@dnvr.uswest.net; http://www.mer.org.

FEBRUARY 18-20, 2000: Coronary Heart Disease Update. Beaver Run Resort, Breckenridge, CO. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

FEBRUARY 20-25, 2000: 26th Vail OB/GYN Conference. Marriott's Vail Mountain Resort, Vail, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

FEBRUARY 24-28, 2000: Thoracic Transplantation. Marriott's Vial Mountain Resort, Vail, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

FEBRUARY 26-MARCH 1, 2000: Neurosurgery in the Rockies. Vail Cascade, Vail, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

FEBRUARY 28-MARCH 2, 2000: Seventh Annual Echocardiographic Workshop on 2-D and Doppler Echocardiography at Vail. American College of Cardiology at Marriott's Vail Mountain Resort, Vail, CO. 17.5 hrs Cat 1. Contact Registration Secretary, American College of Cardiology (800) 253-4636, ext 694.

MARCH 4-10, 2000: CRASH 2000—Colorado Review of Anesthesia. Marriott's Vail Mountain Resort, Vail, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

MARCH 11-18, 2000: Horizons in Surgery. Beaver Run Resort, Breckenridge, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

MARCH 17-19, 2000: Controversies in Transplantation. Breckendrige, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

MARCH 31-APRIL 1, 2000: 4th Ophthalmology Symposium. The Brown Palace, Denver, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

CONTACT INFORMATION
U of Colo—Contact University of Colorado Health Sciences Center, School of Medicine, Office of Continuing Medical Education, 4200 E 9th Ave, Denver 80262. (303) 372-9050 or (800) 882-9153; Fax (303) 372-9065.

IDAHO

To list CME programs here, please send information at least two months in advance to: Ada County Medical Society, Inc. 305 W. Jefferson, PO Box 2668, Boise, Idaho 83701. (208) 336-2930. Brochures, course information, and registration forms are available from the contact person or organization.

FEBRUARY 17-20, 2000: Ada County Medical Society 41st Annual Medical Winter Clinics. Sun Valley Inn, Sun Valley, ID. 12 hrs Cat 1. Contact Judy Barningham (208) 336-2930 or Marie Chester (208) 331-1478.

NEW MEXICO

Information, requests for accreditation, and items to be listed should be sent to the chair of the CME Committee, New Mexico Medical Society, 7770 Jefferson, Suite 400, Albuquerque, NM87109, at least two months in advance. For information on CME accreditation or on the CME requirements of the New Mexico Board of Medical Examiners, please write to the above address or call (505) 828-0237.
NOTE: Course information in the following listing is subject to change on occasion. Check with the sponsoring institution for current details.

Every First and Third Tuesday—Building and Implementing Clinical Practice Guidelines at the Point of Care. Contact Thomas A. Naegele, DO, (505) 275-7267.

JANUARY 30-FEBRUARY 4, 2000: Options in Medical Education. Sheraton Old Town Hotel, Albuquerque, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

FEBRUARY 11-12, 2000: 2000 New Mexico Women's Health Seminar. Hilton Hotel, Albuquerque, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

FEBRUARY 24-25, 2000: Hepatic, Biliary and Pancreatic Disease. Hotel Santa Fe, Santa Fe, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

FEBRUARY 25-26, 2000: 37th Annual New Mexico Urologic Seminar. La Posada de Santa Fe, Santa Fe, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

MARCH 15-18, 2000: Advances in Primary Care. Crown Plaza Hotel, Albuquerque, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

APRIL 6-9, 2000: 20th Annual Emergency Medicine/APLS. Double Tree Hotel, Albuquerque, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

MAY 4-5, 2000: 12th Annual Multicultural Conference. UNM Continuing Education Conference Center, Albuquerque, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

SATELLITE COURSES

Contact Joe Treat or Jim Cato, Immunization Program, (505) 827-2366.

UTAH

All courses listed meet the criteria for Cat 1 of the Physician's Recognition Award of the AMA. To list AMA Cat 1 CME courses, send information at least two months in advance to the Office of Continuing Medical Education, 540 East Fifth South, Salt Lake City, UT 84102; or phone (801) 355-7477. For information on CME accreditation, please write the CME office at the above address. NOTE: Course information in the following listing is subject to change on occasion. Check with the sponsoring institution.

MEDICAL GRAND ROUNDS

Weekly—**Grand Rounds in Internal Medicine, Psychiatry, OB/GYN, and Pediatrics.** Contact UUSM.

Weekly—**Pediatric Grand Rounds.** Contact PCMC.

FEBRUARY 16-19, 2000: The 26th Cardiovascular Conference at Snowbird. American College of Cardiology at Cliff Lodge, Snowbird, UT. 14.5 hrs Cat 1. Contact Registration Secretary, American College of Cardiology, (800) 253-4636, ext 694.

MARCH 6-10, 2000: Park City 2000: Emergencies in Medicine. The Institute for Emergency Medical Education, Medical Education Seminars, and Washington Chapter American College of Emergency Physicians at Grand Summit Resort, at The Canyons, Park City, UT. 22 hrs Cat 1. Contact Lee Ann Williams at Kailani World Travel, 4192 meridian Avenue (Box 9751), Bellingham, Washington 98227, 1 (800) 544-9269 or (360) 671-1800; Fax (360) 647-6008, www.ieme.com.

WASHINGTON

The listing of continuing medical education programs in Washington state is compiled by the Washington State Medical Association. To list Cat 1 programs here, please send information at least two months in advance to Continuing Medical Education, Washington State Medical Association, 2033 Sixth Avenue, Suite 1100, Seattle, WA98121; or phone (206) 441-9762 or (800) 552-0612.
Brochures and registration forms are available from the contact person or organization listed at the end of each course or in the list of course sponsors and contact information.

JANUARY 26-29, 2000: 6th Annual Sports Medicine Conference. Winthrop, WA. Contact Providence General Medical Center (425) 261-3690; Jsackett@Providence.org.

JANUARY 28-29, 2000: Controversies in Primary Care. Seattle, WA. Contact University of Washington (206) 543-1050; cme@u.washington.edu.

FEBRUARY, 2000: Genetics. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

FEBRUARY, 2000: Pulmonary and Critical Care for Primary Care. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

FEBRUARY 10-12, 2000: Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

FEBRUARY 25, 2000: Lynnwood, WA. Contact Providence General Medical Center (425) 261-3690; Jsackett@Providence.org.

MARCH 16-17, 2000: Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

MARCH 22-25, 2000: Phoenix, AZ. Contact Providence General Medical Center (425) 261-3690; Jsackett@Providence.org.

MARCH 25, 2000: Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

APRIL, 2000: Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

APRIL 28, 2000: Seattle, WA. Contact Providence General Medical Center (425) 261-3690; Jsackett@Providence.org.

WYOMING

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AUGUST 4-6, 2000: Issues in Women's Health. Snow King Resort, Jackson Hole, WY. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

A drug culture different than our own

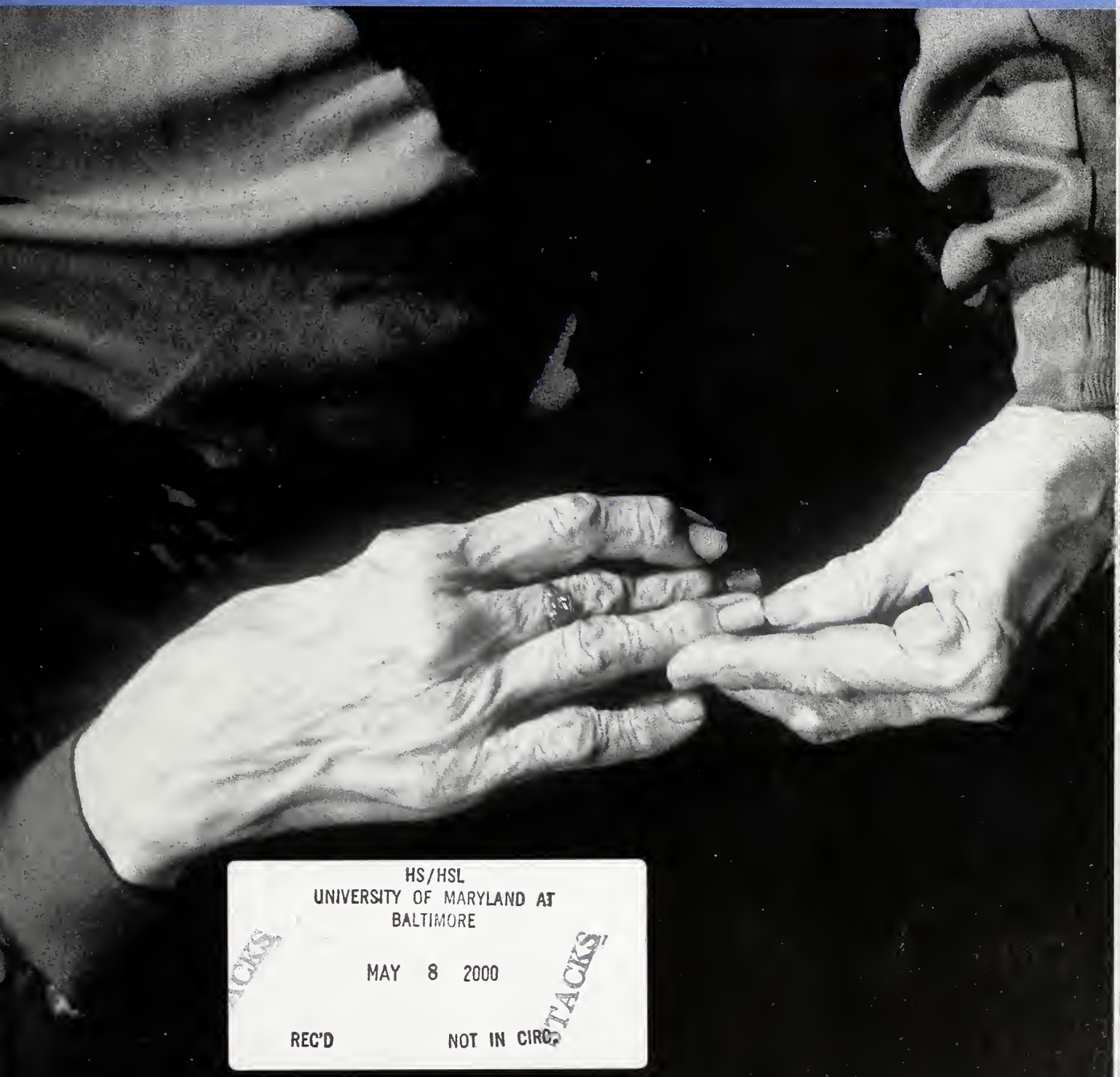
David Heiden

Khat market outside of Sana'a, Yemen, 1989

David Heiden is an ophthalmologist practicing in San Francisco.

wjm

western journal of medicine Volume 172 Number 2 February 2000



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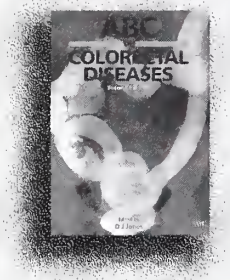

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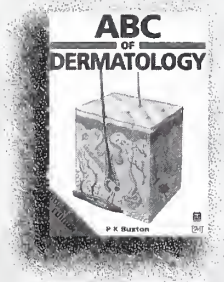

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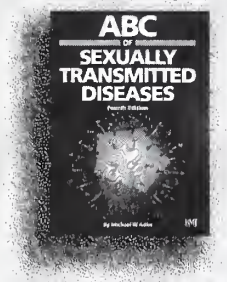

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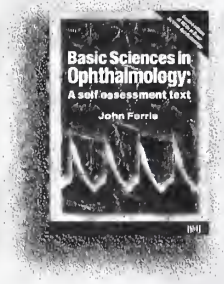

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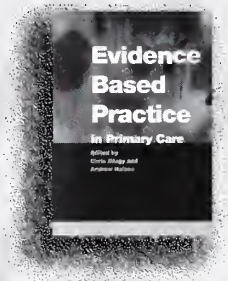

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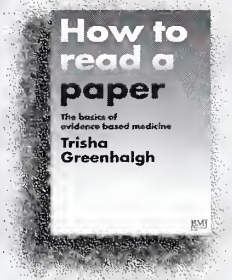

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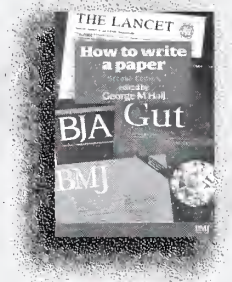

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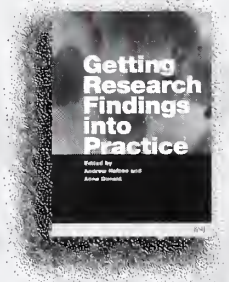

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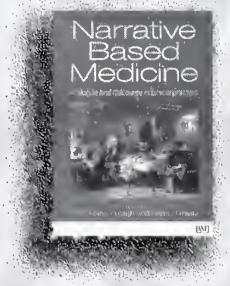

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Editor's Pick

It is not the stuff that medical students' dreams are made of, an area of medicine in which there is little glamor, few dramatic interventions, and, by definition, no cures. Yet the management of chronic disease will increasingly and relentlessly consume more of the health care system's time and resources. Worldwide, the number of people with chronic diseases is growing as the population ages. The evidence suggests that chronic diseases are managed poorly, which is a shame as patients miss out on effective drug treatments and they and their caregivers are denied psychological and social support. This issue is devoted to the many issues used by chronic diseases.

In an Op-Ed on p 76, John Roberts points out that there are 90 million Americans with chronic diseases who spend more than 60% of the country's health budget. Could he, as a physician do more good, he wonders, by setting up community weight loss programs instead of prescribing antihypertensive drugs? In their Op-Ed on p 78, George A Bray and Jennie Macdiarmid echo the call for more preventative measures against chronic disease. There are at least 250 million people who are obese worldwide, yet many countries do not classify obesity as a chronic disease, although it is a major risk factor for diabetes mellitus, gallbladder disease, coronary heart disease, and some forms of cancer. An international obesity management strategy is needed, the authors argue, to provide national guidelines and public education programs.

Many patients with chronic diseases suffer pain, often as a result of peripheral tissue or nerve damage. According to guidelines from the AMA's Council on Scientific Affairs, a subgroup of patients with noncancer pain may benefit from the long-term use of opioids. The risk of drug misuse by patients is small but doctors are still frightened to prescribe opioids for noncancer patients (and even those with cancer) in case of criticism or even legal sanctions. There is, however, insufficient evidence to indicate exactly which patients are most likely to benefit.

The evidence is also scanty for the treatment of chronic prostatitis, a condition that affects about 9% of men at any one time (p 98). Symptoms include lower back or perineal pain and can be severely debilitating. Yet the evidence for well established treatments, such as antibiotics, alpha blockers, and transurethral resection, is inconclusive; few randomized controlled studies have been done. The treatment of back pain can now be supported by research evidence, but typically physicians are slow to change their practice (p 121). Although good evidence shows that bed rest does not improve outcome but that exercise does, physicians are reluctant to suggest the latter, perhaps because it sounds less sympathetic.

Dementia is one of the most cruel of the chronic diseases and for all the recent advances in drug treatment, there is no cure. On p 115, Ruth O'Hara and colleagues review recent findings on Alzheimer's disease and discuss treatment options. There are 4 million people in the US with dementia, a disease that lasts about 7 to 10 years and devastates individuals and families. Research efforts are directed at looking at attacking the amount of β amyloid and understanding the genetic background of the disease. As with many chronic diseases, there are likely to be other, psychosocial risk factors.

The very definition of a chronic disease is a social phenomenon. On p 130, Jean Scandlyn explains the differences between acute and chronic disease and says that while AIDS is now a chronic disease in the Western world where resources are available for drug therapy, it remains an acute disease in the developing world where such treatments are unaffordable. One of the side effects of having a chronic disease is that it carries a stigma: reactions from strangers to a person who is HIV positive are unpredictable. As Scandlyn says, "In some respects the uncertainty of chronic illness is as difficult to live with as the knowledge that you will soon die."

Laurice M Compagno seems to have turned that uncertainty into a positive force in her life. On p 138, she talks about how thalassemia has shaped her personality, making her determined and giving her the desire to be the "best person that I can be." Her family has understandably been stressed by her illness, but one of the major stressors has been the insurance companies, who almost stopped her attending graduate school because her HMO would not cover her treatment if she studied out of state. Compagno argues that physicians alone cannot manage thalassemia. Like all chronic diseases, it needs a multidisciplinary team approach to improve the quality of life for patients and their families.

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February 2000

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Op-Ed

Who pays the bill and who makes the profit in treating chronic disease?

Lack of financial incentives means prevention is often ignored

John Roberts
Bellingham, WA 98226

Correspondence to:
Dr Roberts
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"A courtyard common to all will be swept by none" goes a Chinese proverb. Sadly, this ancient saying remains true in the modern American medical system. At the start of the third millennium of Western culture and progress, the suffering of medical illness arguably may be higher than in the centuries past. Until the last 50 years, illness—often combined with poverty—was a greater shortener of lives. But death, compared with today, came more quickly.

In practice, an internist sees the local viewpoint of national statistics: 90 million Americans alive with chronic disease who spend more than 60% of the country's health care budget.[1] Of the 20 or so patients that many physicians see each day, one, maybe two, might not have a chronic disease. Almost every one of these patients has needs far beyond what a doctor can provide. And much of the reason is inferred from two questions: "Who pays the bill?" and "Who makes the profit?"

At a policy level, the "epidemic" of chronic illness is as much a philosophical debate as it is a medical problem. If people live longer, they get illnesses of aging—dementia, loss of vision and hearing, organ failure, and cancers. In addition, chronic illness today may not have even been illness a few years ago. Mild hyperglycemia is now diabetes. The definition of hypercholesterolemia depends on at least 25% of Americans being "sufferers."

In clinical practice, philosophy is put aside in favor of what we all hope is the current best empirical evidence—that newer definitions of diabetes or elevated lipids are important in identifying people who will someday develop complications. So much of the doctor's day is spent informing patients that they have joined the ranks of the sufferers, even if they don't yet feel the suffering.

But despite the philosophy and the evolving medical evidence, nearly every doctor, at some point, feels like Alice in Wonderland when dealing with chronic diseases. Not only do the definitions change from year to year, the causes are ignored and the treatments can be trivial to the patient's well being.

Most chronic illness is a social problem. The table lists a few of the most common chronic diseases. Cardiovascular disease, cancers, chronic lung disease, and diabetes alone are responsible for about 75% of American deaths. But are these diseases solely the problem of doctor and patient? What should be the role of a doctor? Instead of prescribing nitrates and beta blockers, it may be more productive to help set up community weight-loss and activity-promoting groups. When we open our prescription pads, some of us are haunted by the question, "Could I—should I—be doing something else about this?" Too often physicians can feel they are shifting single grains of sand along the beach during a hurricane.

Except for the patient and the general community, we all do well by maintaining the status quo. Community leaders are not deposed because of their pro-health positions that would require more vigorous public health measures, and doubtless more taxes. Business firms need not spend money and energy on smoking and lifestyle modification plans for their employees, since most of the suffering will come after retirement. Hospitals and other health care institutions thrive on illness. Health plans, especially managed care plans, could plan community-wide programs to prevent chronic disease. But because of the number of plans and the frequency that customers change plans, the hopes of long-term savings from prevention strategies seem to get lost. (So now, managed care plans focus hard on a handful of measures that are used to rank the plans in a marketplace, not to prevent human suffering.)

And we doctors and our noble profession: If it pays, we do. If not, then . . . well, maybe. Most of our payers reward us for meeting the prevention targets on which they are ranked—annual eye exams for persons with diabetes, beta blockers for patients who have had myocardial infarction, immunizations for children. But we perform less well when the reimbursement is not direct or is even absent. Monitoring and treating a patient with an elevated cholesterol concentration occurs less often than monitoring glycemic control.[2] One can guess which is favored by payers, while the evidence might suggest we practice otherwise.[3]

Most common chronic diseases in the United States

Condition	Prevalence (%)	Annual costs*
Atherosclerotic diseases	25	$274 billion
Diabetes mellitus	6	$98 billion
Oral diseases	86 by age 17	$50 billion
Alzheimer's disease	1.5	$152 billion
Chronic obstructive lung disease	6	$25 billion
Epilepsy	1	$14 billion
Osteoporosis	4	$15 billion

From the Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Atlanta, GA
*Costs are direct and indirect and are estimates from 1993 to 1995

Those who claim that health care is not a market might step back and take a look at the issue of chronic diseases from the community's view. At that level, for example, the cost of preventing one dental cavity through fluoridation would be $3, while the cost of the dental repair would be $55.[1] For each of us in the medical care industry, the questions become "Whose $3 is spent?" and "Who gets to take home the $55?"

According to the National Center for Health Statistics, almost 20% of Americans over 45 years of age are hearing impaired, but how often do we formally assess hearing? The Center's surveys find that only about 40% of patients with diabetes have ever received formal education about controlling their diseases. In our own medical group, an informal financial analysis showed that a diabetes education program would likely be "financially negative." In chronic disease, the common good too frequently falls victim to our individual goods.

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Who should care for people with chronic diseases?

Members of the care team should play to their strengths and not compete for roles

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Should non-physicians care for people and families with chronic diseases? Absolutely. Chronic disease is accompanied by the need to make adjustments in lifestyle, self-image, and the everyday life of the entire family. To expect physicians to have the expertise and time to guide patients and their families at every step of the way is unreasonable. Chronic disease care requires a team of professionals including, to name a few, a team leader; a dietitian with in-depth expertise in dietary education and rehabilitation; a physical or occupational therapist for physical accommodations and adaptations; and a family or spiritual counselor to provide support in coping with changes in the patient's or family's roles. It is possible to fall short of the team's goals if team members forget the importance of the others or if a person with a certain expertise is not easily available. But until recently, that was the most common and difficult problem.

A new problem occurs when members of a collaborative team compete for the same role. This seems to arise most often when advance practice nurses attempt to claim the role of medical team leader. The concept of the nurse practitioner or advanced practice nurse is not new. In the 1970s, nurses began to develop special training programs to prepare for nursing in unique situations: rural areas, neonatal intensive care units, and operating rooms.[1,2] The nurses selected to receive further training had many years of experience. Reports of nurses in these roles stated that they worked collaboratively with physicians, often providing services in narrow areas such as general anesthesia in low risk operative procedures, the routine care of high risk newborns in specialized units, or assessment and treatment of minor illnesses with frequent consultation and constant availability of physicians.

Many reports describe nurses doing similar work in special programs for a single chronic disease, such as asthma, rheumatoid arthritis, myocardial infarction, or stroke. Most of these programs are under the umbrella of a tertiary care hospital system that provides regular evaluation of the patients and required medical services.[3-5] Few of these programs have been adequately evaluated to determine the long-term outcomes and patient satisfaction with their care for that specific disease.

While these special care programs led by nurses may meet the needs of the small group of people with chronic diseases who receive care at tertiary centers, they are not as feasible for people receiving care in a general practice setting. In most such settings, it is not a single chronic disease, but a multitude of conditions, that requires the team approach.

Should nurses become the medical team leaders or primary care givers for all of these many conditions? Not only is this concept inconsistent with the focus and duration of their training,[6-8] but also, who will provide the advanced nursing care and expertise that have served patients so well?

We have a model of the effective use of the unique skills of nurses to assess and monitor the progress of patients and their families. That model comes from the hos-

pital. No one (except administrators who are focused on cost) believes that the hospital could function without the primary role of the nurse as a nurse and a collaborating member of the health care team. Hospital nurses don't strive to become team leaders; they recognize there is a unique role for nurses applying their nursing skills.

Can such a team work in the ambulatory care setting? I believe so, having practiced as a member of that team. People and families who live with chronic diseases need individualized medical care programs, dietary programs, physical therapy programs and nursing programs. Nurses are uniquely equipped to provide practical education on the everyday activities of people with chronic diseases.[9-11] They know how to provide a detailed nursing assessment of patients and their families, without which many patients and families do not receive maximum benefit from the medical regimens designed for them. The medical regimen may fail to account for financial stress, cultural dissonance or a knowledge gap that a nursing assessment may identify. Follow-up visits to the nurse, or better yet home visits, will of course include the physical diagnostic skills of the advanced practice nurse.[12,13]

But the education will not stop with the patient and family. The nurse can teach the other members of the team how to identify many barriers to and enhancements of caring for the family. We should collaborate using the strengths of advanced nursing skills to ensure not only satisfaction with our professional roles, but the best care for the people and families living with chronic diseases.

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The epidemic of obesity

A chronic disease that governments worldwide must take seriously

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The worldwide epidemic of obesity is reaching critical proportions.[1-3] An estimated 250 million people in the world are obese, and this number is predicted to reach 300 million by 2025.[1] Obesity is a chronic disease that is caused by eating more calories than are expended. Obese people are, therefore, stigmatized. Obesity causes pathologic changes in the body: enlarged or hypertrophic fat cells produce associated clinical complications such as diabetes mellitus, gallbladder disease, hypertension, and some forms of cancer by releasing more free fatty acids, cytokines, and other products of fat cell metabolism

As a major risk factor for a number of noncommunicable diseases, including diabetes mellitus, coronary heart disease, hypertension, osteoarthritis, gallbladder disease, and some forms of cancer, obesity merits a high priority for strategies for prevention and, where this fails, for clinical management. The increasing prevalence of obesity will have a major effect on health care costs.[4] In addition to the direct costs, there are many indirect economic and social costs that are often forgotten. Obesity has joined the ranks of chronic diseases that have displaced undernutrition and infectious diseases as the major killers of people.[5]

Preventive strategies are the primary tools to slow or reverse the worldwide explosion of obesity.[1] This is where governmental research and demonstration projects are urgently needed. No matter how effective preventive strategies may be, however, there will still be a large pool of people who are already at risk of complications from their obesity and who need treatment. Viewing obesity as a multifactorial disease with distinctive pathologic and pathophysiologic processes provides a medical framework in which to consider treatment. A major difference exists between obesity and other chronic diseases such as hypertension or atherosclerosis. The presence of obesity is evident to obese people as well as to casual observers—that of hypertension and atherosclerosis is not. Thus, the management strategies for treatment and secondary prevention of weight regain must be appropriate and safe enough for

use by all overweight people, even those who may be without clear medical indications for intensive interventions such as drug treatment.[6]

The problem of managing obesity needs to be tackled immediately. Although health care services for obesity exist in many countries, these tend to be located in cities (often in specialist hospitals), where people often have to pay for their treatment. This limits the service to the more affluent, depriving those in rural areas and people of lower socioeconomic status or those belonging to ethnic minorities of these services. Yet, people in lower socioeconomic groups have a high incidence of obesity.[7] This group needs to be targeted for treatment but is being excluded by the health care system. In some countries, health insurance companies pay for the treatment of obesity, but most insurance carriers in North America do not. Funding is a major consideration in the management of all chronic diseases, but this is complicated further in patients with obesity, a disease that is still not recognized as such in many countries.[7] This is an area that urgently needs public and governmental action.

An international obesity management strategy could provide a framework on which to base national guidelines for the management of obesity. Many political, attitudinal, cultural, and geographic factors need to be taken into consideration when implementing guidelines. Many government and health systems have a negative attitude to obesity, which highlights the need to raise awareness of obesity as a serious health condition.[5]

A multinational campaign for people to "Know your body mass index" could be a first step in raising public and professional awareness of this global epidemic. When the ravages of hypertension and atherosclerosis were recognized, governmental programs were aimed at encouraging the public to "Know your blood pressure" and "Know your cholesterol" and to seek treatment when needed.

Although many countries are starting to recognize the problem and to take it seriously, much still needs to be done to prevent and manage obesity effectively. The vital link between the lack of funding and lower socioeconomic status will need special consideration in all strategies to manage obesity.

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BIBA but LGFTD

The purist element in most of us dislikes the use of abbreviations. We tend to view them as unsightly, a blot on the language, a sign of laziness or ignorance. We are irritated that only a select few (but others than ourselves) understand what they mean.

Take AB, a 59yo BM (a non-scatological term) S/P TURP/DES, BBPR, with elevated JVD from CHF, Dx GOK or NYD. Or William Bean's patient (*Tower of Babel,* 1963), a "45 yo SCF hsewfe G10 P6A4 c C.C SOB, 4mo PTA. Sn's & Sx's CHF c PND, DOE, & PE. LMD found m's of MS, MI, AS, AI & ?IVSD (R/O IASD & PDA). EKG showed LVH, RVH, LAH, RBB, PVC's, AF, old MI . . . ." Despite further w/o and Rx, "on the second day the patient jumped out of the window."

Nowadays, computer literate residents prefer to write case insensitive histories, such as "49 hisp, fem, hd, sz, htn, sob, cp, ccu, dx esrd, dm, ams, cp, chf, gi obstr." Some medical journals allow so many abbreviations that their articles cannot be read without constant reference to a glossary.

Yet long words take a long time to write down, and people have always felt the need to use abbreviations. In the 19th century, in her letters, Jane Austen referred to her novels as P&P, S&S, and MP. A popular system used lower caps superscripts, such as inform^{n}, commun^{n}, or realisa^{n}. A recent computer search disclosed 14,994 matches for "medical abbreviations"—lists, glossaries, dictionaries, and even books. Hospital committees periodically publish lists of "approved" abbreviations—largely ignored.

How much more practical are the stock exchanges, where symbols for MCD (what we eat), BUD (what we drink), MO (what we smoke), or MRK and GLX (drug makers) are official, fixed, and universally recognizable? It is a pity that medicine does not have such a universally agreed system, at least for some commonly used terms. It would eliminate a great deal of confusion and errors, as well as much hd, aggr, and wc (writer's cramp).

(Glossary for the uninitiated: BIBA, brought in by ambulance; LGFTD, looks good from the door; BBPR, bright blood per rectum; SP/TUR, status post-transurethral resection of prostate; GOK, God only knows; NYD, not yet diagnosed; hd, headache; sz, seizures; cp, chest pain; ccu, coronary care unit; dm, diabetes mellitus.)

George Dunea, Cook County Hospital, Chicago, IL

In the Public Eye

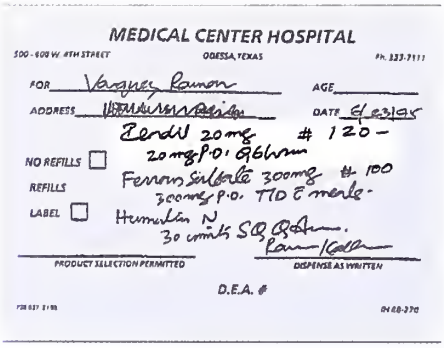
News and Features

Compensation awarded for death after illegible prescription

Fred Charatan, Florida

A Texas jury has attributed the death of a 42 year old patient to an illegible prescription and has ordered the doctor who wrote it to pay $225,000 compensation to the patient's family. The total judgment of $450,000 included an equal award against the dispensing pharmacist.

The doctor, cardiologist Dr Ramachandra Kolluru, wrote a prescription for 20 mg Isordil (isosorbide dinitrate) for angina, every six hours. But, because of the illegibility of the prescription, argued Kent Buckingham, lawyer for the family of the patient, Ramon Vasquez, the pharmacist dispensed the same dosage of Plendil (felodipine), a calcium channel blocker used in the treatment of hypertension, for which the maximum daily dose is only 10 mg. A day after taking what equalled a 16% overdose of felodipine, Mr Vasquez had a heart attack and died several days later. The overall quality of care given by Dr Kolluru was not at issue, the jury heard; his illegible prescription was the sole reason for the judgment.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The illegible prescription

The case again raises the issue of the legibility of doctors' handwriting. Mr Buckingham pointed out: "Many doctors are having to stop and think, 'That prescription I wrote illegibly this morning may result in an adverse verdict.' "

Three policies issued over the past 7 years by the American Medical Association have urged doctors to "improve the legibility of handwritten orders for medications" and to review all orders for accuracy and legibility after writing them. Doctors with poor handwriting are advised to use direct, computerised order entry systems or at least to print or type medication orders. Dr Kolluru's lawyer, Max Wright, said after the trial: "This jury clearly questioned why in the electronic age . . . we're still using this antiquated system based on a three and a half by five inch piece of paper."

A trustee of the American Medical Association, Donald Palmisaro, noted that reducing all sources of medication errors is a top priority of the National Patient Safety Foundation at the association. In addition, the US Adopted Names Council, housed in the association, aims to reduce such errors by helping drug manufacturers to avoid drug names that look or sound alike.

US board of education advises against drugs for behavioral problems

Fred Charatan, Florida

A US board of education has passed a resolution urging teachers to use discipline and instruction to overcome problem behavior in the classroom, rather than encouraging parents to seek drug treatment for their children.

The resolution passed by Colorado Board of Education carries no legal weight but sounds a warning on the growing use of drugs such as Ritalin (methylphenidate hydrochloride) to deal with disruptive behavior

in schools. Board members supporting the resolution believed that many violent crimes committed by school students are committed by young people taking psychotropic drugs. In the massacre last spring at Columbine High School in Littleton, Colorado, one of the teenage shooters, Eric Harris, had been taking the antidepressant Luvox (fluvoxamine).

The board's action, believed to be the first in the United States, is sure to intensify the debate over the use of psychotropic drugs in conditions such as attention deficit hyperactivity disorder. An estimated 2.5 million children in the United States are now taking drugs for this type of problem.

Peter Breggin, director of the International Center for the Study of Psychiatry and Psychology, a non-profit research organization in Bethesda, MD, believes that doctors are overprescribing psychotropic drugs. "It's a tremendous mistake to subdue the behavior of children instead of tending to their needs," he said. He is convinced there is a direct link between the drugs and violent acts.

The use of psychotropic drugs in children with attention deficit hyperactivity disorder was examined last May in the *Journal of the American Academy of Child and Adolescent Psychiatry*. A review of a sample of nearly 1300 children in four US communities showed an overall rate of the disorder of about 5%, based on formal diagnostic criteria. Results showed that fewer than one in eight children with the disorder received stimulant drugs. Reassuringly, the researchers concluded that children with the disorder were more likely to receive other forms of treatment than to receive stimulants.

Stephen Stahl, a professor of psychiatry at the University of California in San Diego, said: "If a kid is acting out in class and a stimulant like Ritalin calms him down, it would be immoral not to give him the medicine." He cautioned, however, against giving such treatment in isolation, "as an excuse to avoid tough decisions, or talking with teachers and doctors to learn what's going on."

HMO sues charity over domain name

Douglas Carnall, BMJ, London, UK

A large Californian health maintenance organization is suing a health charity because it wants its Internet domain name. HealthNet is owned by Foundation Health Systems and looks after 2.2 million Californians with a budget of $8.9 billion. In contrast, SatelLife, which owns the HealthNet.org domain name, has an annual budget of just over $1 million. It helps health workers in 164 countries access health information using email and a cheap low orbit satellite connection.

HealthNet registered its name as a trademark in 1981, but did not register HealthNet.net and HealthNet.com as domain names until 3 years after SatelLife registered HealthNet.org in May 1993.

The charity does not want to give way. "Changing the domain names would involve reprogramming machines in many remote developing world locations, as well as the satellite," said SatelLife director Holly Ladd. "We estimate it would cost more than $1 million to do, and create considerable confusion amongst our overseas users. There is little likelihood that users would confuse healthnet.org with healthnet.com. After all, they plan to spend $20 million on their web presence alone next year."

The charity is also unhappy about the $7000 legal bill the action has already incurred, although its future costs are being met on a pro bono basis by a sympathetic legal firm. Until 1993, domain name registration was under the aegis of a single organization, Network Solutions, who tightly maintained access to the coveted ".com" ".org" ".net" and ".edu" domains.

The process was fully privatized in 1998. The history of this process is described at www.networksolutions.com/internic/internic.html. The non-profit organization that oversees the domain name registration companies is ICANN. Its policy on dispute resolution is at www.icann.org/udrp/udrp-policy-24oct99.htm.

Passive smoking is more risky for women with a missing gene

Scott Gottlieb, New York

The combination of environmental tobacco smoke and a missing gene may make some women up to six times more likely to develop lung cancer if they are exposed to second hand smoke, according to the results of a new study. The lead author, Dr William P Bennett of the National Cancer Institute in Bethesda, Maryland, and colleagues set out to determine if common genetic polymorphisms associated with the activation or detoxification of carcinogenic agents found in environmental tobacco smoke were associated with an increased vulnerability to lung cancer.

They tested for the genetic alterations in the archived tissue samples of 106 white Missouri women, mostly rural housewives, who had never smoked but had nevertheless been given a diagnosis of lung cancer. Researchers found that those women lacking a specific gene were more likely to develop lung cancer as a result of second hand smoke and that they showed a rising trend in their risk of developing lung cancer with increasing smoke exposure (*J Natl Cancer Inst* 1999;91:2009-2014).

The researchers identified a significant interaction of gene and environment among the women, in which a specific genetic alteration seemed to make women more susceptible to the carcinogenic effects of environmental tobacco smoke. The alteration caused a deficiency in a compound called glutathione-S-transferase M1 that, under normal circumstances, is used by the body to detoxify certain carcinogens commonly found in tobacco smoke.

As the exposure to environmental tobacco smoke increased, so did the risk of lung cancer for women with the gene deletion, reaching a more than sixfold increase in risk in women exposed to the highest levels of environmental smoke.

Mail

Herbal drugs • Teaching in private practice

Ask patients which herbal drugs they smoke as well as eat

To the Editors,
Devoting an entire issue of the journal (September 1999) to alternative medicine is timely because alternative medicine has recently increased in popularity in the United States. The total 1997 out-of-pocket expenditures related to alternative therapies were conservatively estimated at $27 billion; at the same time, a 380% increase was observed in the use of herbal remedies compared with 1990.[1]

Dong quai potentiates the anticoagulant effects of warfarin

Among the herbal drugs that may give rise to an adverse reaction, dang gui or dong quai (*Angelica sinensis*) was referred to in two of the articles.[2,3] Unfortunately, no mention was made in either article of its interaction with warfarin sodium. Warfarin is one of the most commonly prescribed western medicines as an anticoagulant in the management of atrial fibrillation, which is the most common arrhythmia, found in 3.8% of the population older than 60 years and up to 11% in persons older than 70 years.[4] Dong quai potentiates the anticoagulant effect of warfarin.

Another popular and commonly used herbal medicine that potentiates the anticoagulant effect of warfarin is danshen, which is a widely used Chinese herbal drug in cardiology for the treatment of various symptoms of coronary artery disease, including angina pectoris, myocardial infarction, and congestive heart failure.[5-7] Danshen may be not only taken by mouth but also inhaled. It has become so popular that it has even been incorporated into some Chinese cigarettes.[7] Therefore, in taking history from a Chinese patient, the physician should not only ask which oral herbal drugs the patient is taking but also what brand of cigarettes he or she smokes.[5]

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Clinicians in private practice give generously in teaching time

To the Editors,
In his Letter from the Northwest Roberts reflects on the "overpowering greed for money in private practice." [1] He states that the clinical decisions made and the ethics of private medicine are primarily driven by dollars. There is little hope, he says, of the academic and private sector sharing their special strengths. Although I agree with his concern over the divide between "town and gown," I do not share his opinion of the greed that he finds in private practice.

Colleagues and I recently completed a survey of clinical faculty who volunteer to teach at one institution (1996-1997) to determine

the total number of hours contributed by volunteer teaching and administration and to compare this with the number of full-time-equivalent staff. Forty-nine percent of 902 active clinical teachers responded to the survey. Altogether 168,230 hours were contributed by these volunteer teachers during the academic year studied; this corresponds to a total of 81 full-time-equivalent staff. This survey clearly shows that the volunteer clinical faculty were contributing a crucial number of teaching hours to medical students, house officers, and fellows. Those who were surveyed reported that the experience has been a positive one for both students and teachers. Many volunteer faculty have been outstanding role models for their students as is shown by the students' evaluations of their teachers.

Today, both academic centers and those of us in private medicine face great challenges. In some areas, a greater proportion of teaching activity has shifted to the community and is being performed by volunteer clinical faculty. These programs have had little substantive support for this important educational effort. Because of the economic changes brought about by managed care, this important voluntary teaching activity is in danger of extinction. It is imperative that we develop and support the concept of departments of community-based medicine; these can be centers of excellence where community-based education is supported and nourished so that we will ensure the best possible outcome for the future.

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Med.Pix

A cutaneous manifestation of a systemic disease

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QUESTION: A 52-year-old African American man reported the development of new bumps on his knees and elbows over the past 2 to 3 weeks. The patient had not seen a doctor for 6 months but had a history of diabetes that is treated with diet alone. Aside from some increased thirst and more frequent urination over the past 2 months, he said he was otherwise feeling well.

The patient was a 6′1″ and 214 lb man. He was normotensive. Darkly pigmented, firm, and non-tender papules were evident on his elbows and knees (figures 1 and 2). There was no pruritus associated with these papules.

What is your diagnosis and how would you proceed with workup and treatment of this patient?

Figure 1

Figure 2

ANSWER: The patient has eruptive xanthomas and diabetes mellitus. At the time of this office visit, a finger-stick glucose value was 232 mg/dL and urinalysis revealed +++ glucose and no ketones. Laboratory evaluation the next day after fasting overnight revealed a triglyceride level of 1324 mg/dL and total cholesterol was 315 mg/dL. High density lipoproteins were measured as 32 mg/dL and there were no chylomicrons present. The high triglyceride level confirms the diagnosis, and a skin biopsy is not needed.

DISCUSSION

Eruptive xanthomas are a cutaneous manifestation of a chronic systemic disease. Eruptive xanthomas can be seen in primary and secondary causes of hyperlipidemia; examples of primary genetic causes include familial dyslipoproteinemia, familial hypertriglyceridemia, and familial lipoprotein lipase deficiency.[1] Diabetes out of control is a common cause of secondary hyperlipidemia and is certainly a contributing factor in this case. Although the patient may also have a genetic abnormality of his lipoproteins, further classification will not change the treatment of his diabetes and hyperlipidemia. Regardless of the underlying metabolic defect, his family members should be screened for hyperlipidemia and diabetes.

Eruptive xanthomas are typically seen as papules on the elbows, knees, buttocks, and back. In light-skinned individuals, the papules are red and may have a yellow center. Papules may become confluent and if larger than 5 mm would be classified as nodules. In this darkly pigmented individual, the papules appear hyperpigmented.

TREATMENT AND CASE RESOLUTION

The most pressing treatment priority is the patient's diabetes that is out of control. The patient was started on a prescribed regimen of metformin with additional diet and exercise counseling. Gemfibrozil was prescribed to decrease the high triglyceride and cholesterol levels.

Fortunately, the treatment of the eruptive xanthomas involves nothing more than treating the underlying hyperlipidemia.[2] Because this hyperlipidemia occurs at least in part secondary to the diabetes, diabetic control will promote resolution of the eruptive xanthomas.

As the patient's diabetes and hyperlipidemia came under better control, the eruptive xanthomas began to disappear. The papules resolved more quickly than the hyperpigmentation.

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Original Research

Case-control study of 10 years of comprehensive diabetes care

ABSTRACT **Objective** To describe the long-term clinical impact of a comprehensive management program instituted throughout a health system for members with diabetes mellitus. **Design** 10 year case-control evaluation. **Setting** Kaiser Permanente Northwest, Portland, OR. **Participants** Members of the health maintenance organization between 1987 and 1996; members with diabetes were compared with equal numbers of members without diabetes. The number of participants with diabetes ranged from 5331 in 1987 to 13,099 in 1996. **Main outcome measures** Number in diabetes register, mortality, change in comorbidity, rates of uptake of preventive health measures, use of pharmaceuticals, levels of risk factors, hospital days per thousand per year, emergency room visits per thousand per year. **Results** The prevalence of diabetes identified in this population rose from 2.54% (7,895/310,819) in 1987 to 3.66% (14,741/402,754) in 1996, and the mean (SEM) age of members at the time of diagnosis fell slightly from 62.9 (±0.21) years to 62.0 (±0.13) years ($P < 0.05$). By 1996, 10,885 of the 13,099 (83% ±0.3%) of members with diabetes had an annual laboratory test to assess glycemic control, the annual screening rate for retinopathy was 67.6% (±0.4%), the rate of uptake of influenza immunizations was 60.2% (7,886/13,099) and the screening rate for nephropathy was 43% (5,698/13,099) (±0.49%). The use of home glucose testing increased from 32.4% (1721/5331) of members with diabetes to 53.0% (6,942/12,099); the use of lipid lowering drugs increased from 3.5% (187/55,331) to 19.8% (2,594/13,099). The use of angiotensin converting enzyme inhibitors increased from 8.5% to 34.8% of members with diabetes. Mean blood pressure decreased from 144/82 mm Hg (±0.8/0.4) to 138/79 mm Hg (±0.3/0.15), and mean total cholesterol concentrations dropped from 243 mg/dL (±4.2) to 215 mg/dL (±0.6). By 1996, 56.4% (7,388/1,3099) (±0.5%) of members on the diabetes register had good to excellent glycemic control (HbA_{1c} <8%). Mortality decreased from 4.8% (256/5331) (±0.3%) to 3.6% (472/13,099) (±0.2%) among members with diabetes, this was a more rapid decrease than was observed among those without diabetes ($P < 0.01$). The annual ratio of visits to the emergency room by members with diabetes to members without fell from 2.5 to 1.8, and the ratio for the number of days spent in acute care in the hospital dropped from 3.6 to 2.5. **Conclusions** This centrally organized program based in a primary care setting and utilizing a register of patients with diabetes was associated with substantial improvements in the process and outcomes of care in a large population of health maintenance organization members with diabetes.

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Over the past decade, prospective randomized trials have shown that intensive treatment can reduce the development and progression of many of the complications of diabetes mellitus.[1-7] These trials studied risk factors separately, usually within homogeneous groups of highly selected and motivated participants. The studies were not designed to measure population-based impact, did not study typical populations in routine settings of care, and did not assess the effects of the management of diabetes throughout a health system. Moreover, they did not attempt to assess the impact of real life changes in treatment guidelines in the complex, interactive systems that make up the social and economic environments of medical care.

Several reports of real world efforts to reorganize diabetes care have now appeared but these studies have been of uncertain generalizability because of limited scope and/or short duration.[8-19] We do not yet have data on the effects of such efforts on long-term complications, mortality, and net long-term changes in resource use.

METHODS

Study site and population

The study site was the northwest region of the Kaiser Permanente medical care program, a non-profit, health maintenance organization located in Portland, Oregon, and the surrounding metropolitan area. Members of the organization are similar in terms of age, economic status, and education to residents in the surrounding community, who are largely non-Hispanic white people. Membership grew from about 340,000 to about 400,000 people during the study. The study site is extensively described elsewhere.[20-24]

Intervention

In 1988, the organization began a program of population-based primary care management of diabetes. Up until 1995, this program had evolved to include an electronic diabetes register (begun in 1987) that has been updated weekly since 1993 and that supports most of the organi-

Summary points

- Over the past decade, prospective randomized trials have shown that intensive treatment can reduce the development and progression of many of the complications of diabetes mellitus
- Several reports of real world efforts to reorganize diabetes care have been of short duration and uncertain generalizability
- In 1988, our health maintenance organization began a program of population-based primary care management of diabetes
- By 1996, mortality had decreased among members with diabetes, and the annual ratio of visits to the emergency room by members with diabetes to members without fell from 2.5 to 1.8
- This centrally organized program was associated with substantial improvements in the process and outcomes of care in a large population of members with diabetes

zation's other diabetes programs; a diabetes steering committee, consisting of endocrinologists, primary care physicians, nurse managers, pharmacists, a health plan administrator, a data analyst, and a researcher; a program of diabetes research in the affiliated research center that created the register and extensively evaluated diabetes care in 1990; annual educational updates for providers affiliated with the health plan and, since 1991, the publication of a quarterly newsletter for health plan clinicians. For patients the program has developed improved patient education plans which offer better access to diabetes classes (since 1993); a restructured curriculum that teaches patients how to reduce their risk of cardiovascular disease as well as antihyperglycemic care; the introduction of diabetes educators into primary care medical offices (1992-1995); and a shift to a teaching focus that is more modular, less didactic, and more oriented towards patient empowerment; population-based management by nurses using behavioral and medical protocols in the patient empowerment framework; support of patients by pharmacists, which includes training in self-monitoring of glucose concentrations, counseling at the time of the first purchase of new drug treatment, feedback to physicians about the patient's ordering of drug treatment, and providing assistance to the nurse care managers; group sessions led by nurses[15]; cooperative care clinics (group medical visits for people with diabetes) used by some physicians starting in 1994; outreach programs for flu immunization and screening for retinopathy; electronic flagging of the charts of outpatients and people hospitalized with diabetes to alert staff and to drive programs such as automatic shoe removal and foot checking (started in 1994); guideline development and implementation for type 2 diabetes starting in 1993 (including a closely followed 1995 recommendation to use metformin in cases of secondary sulfonylurea failure); and quarterly reports to primary care clinicians about the status of their panels of patients with diabetes (since 1995) with regular population tracking reports to the diabetes steering committee (since 1993).

Analytic methods

Our primary analytic objectives were to provide a benchmark against which data from diabetes management programs could be compared as they became available and to show the direction, if not the exact magnitude, of the long-term impact of the organization's diabetes management program. The program was a natural experiment affecting a growing and changing population of patients in a medical care environment that also evolved to include other, similar initiatives. Our approach was primarily descriptive to provide maximum transparency and useful reports. Our objectives were to provide as much data as possible about the changing composition of the register as well as about its outcomes and to show a complete chain of improvement.

In addition, when data were available, we used a case-control method. To control for evolution in the composition of the register and for secular changes in market forces, organizational structure, and processes of care, members without diabetes were matched annually to members with diabetes on a one to one basis by age, gender, duration of membership in the health plan, and level of pharmacy benefits. We then calculated ratios of utilization and mortality in members with diabetes and compared these with the ratios in members without diabetes to track changes in the status of members with diabetes. The ratios provide standardized indexes by which change in diabetes-specific performance can be observed. If, for example, the ratio of the annual number of days spent in hospital by members with diabetes as compared with those without diabetes drops, it is reasonable to conclude that something specific to the care of diabetes or to the health of those on the diabetes register reduced the use of hospital resources.

To test the hypothesis that mortality improved more quickly in people with diabetes than in those without, we regressed mortality ratios against time. For most outcomes, however, changes over time were clearly clinically and statistically significant, obviating statistical modeling. We present many of our results graphically. (These results can be found on the *WJM*'s website.) Standard errors for mean values and P values for differences between starting and ending values are presented. Statistical analyses were performed using SAS software version 6.12 (SAS Institute, Cary, NC).

Sources of data and definition of measures

Members with diabetes were identified for the register from dispensing records for insulin, sulfonylurea drugs,

metformin, and blood glucose testing supplies[21]; from hospital discharge diagnoses reflecting the presence of diabetes; and from diabetes education contacts. An endocrinologist (HSG) reviewed uncertain cases weekly, including registrants identified solely from the purchase of testing supplies. Since inception, the register has been more than 99% specific for diagnosed diabetes, based on comparisons with 425 randomly selected medical charts. In 1987, we estimated that the register was 85%-90% sensitive for diagnosed diabetes, based on comparisons against laser photocoagulation records and other data. By 1994, based on a comparison with electronic records of HbA_{1c} results, we found the register to be more than 99% sensitive.

Data describing diabetes registrants were obtained from the organization's electronic clinical and management records. These include records of all acute hospitalizations (since 1975), all prescriptions dispensed from pharmacies (since 1986), all ambulatory care appointments (since 1986), all clinical services purchased outside of the organization (since 1986), and all clinical laboratory testing on members (since mid-1993). Laboratory data for 1987 and 1988 were abstracted from the paper medical records of 425 randomly selected registrants. Hospital data include admissions to acute care hospitals both within the organization and outside it.

To provide a valid denominator for annually defined performance measures, we included any registrant's data only for years when she or he belonged to the organization for 12 full months. Laboratory values are the average of all values for the relevant calendar year. We defined nephropathy screening as measurement of either urinary albumin concentration on a random or 24-hour timed specimen or a timed collection for total urinary protein. We defined hyperlipidemia screening and tracking as any total cholesterol or fasting lipid test. Between 1994 and 1997, the most common test for chronic hyperglycemia monitoring in the organization was the fructosamine assay. In this report, we convert fructosamine results to their HbA_{1c} equivalents (using the Diamat HPLC assay) using the formula: fructosamine concentration/40 = HbA_{1c}. This approximates the actual relationship found in our population and is based on the regression analysis of 364 paired samples drawn simultaneously (S Welch, unpublished data). To measure comorbidity at the time of diagnosis, we calculated the Chronic Disease Score, a validated measure that estimates the number and severity of chronic health conditions for an individual based on data describing his or her purchases of drugs.[25,26]

We presumed that an annual retinal screening occurred whenever a registrant had one or more visits to an optometrist or ophthalmologist at the organization in one calendar year. We defined mortality as the probability that a person included in the analysis in a given year died in the following year. (Because people who die cannot have 12 full months of eligibility in the year they die, we cannot report mortality in the year of observation and also maintain comparability with other data in this report.) Mortality was ascertained from records of health plan membership.

RESULTS

Register composition and growth

The number of people on the register grew linearly, more than doubling during the 9 years from 5339 people registered on January 1, 1987, to 13,099 registered by January 1, 1996, as new diagnoses and new enrollments exceeded deaths and disenrollment from the health plan. The number of newly diagnosed and newly enrolled members with diabetes was nearly constant each year, except for a modest spike in new members with pre-existing diabetes in 1996, when enrollment in the organization increased substantially. The number of deaths remained roughly proportional to the number registered, and the rate of disenrollment grew slightly. As a result, the overall prevalence of diabetes diagnosed in the organization's membership grew from 254/10,000 in 1987 to 360/10,000 in 1996 (see figure 1 on the *WJM*'s website).

Aging and mortality

The mean age of registrants decreased only slightly over the 10 years from 62.9 (SE 0.21) years to 62.0 (0.13) years ($P < 0.05$). Deaths among older registrants and the continuing influx of younger registrants offset aging among continuing registrants (see figure 2 on the website). The mean age of newly diagnosed cases remained comparatively constant after the first 4 years once the register captured an initially unrecognized group of untreated patients with type 2 diabetes and those who had been treated through diet, as well as people who did not regularly purchase drugs from the organization. The age of newly enrolled members who already had diabetes fell steadily. The mean age of those on the register who died increased from 73.1 (0.69) years to 75.8 (0.52).

Changes in comorbidity at diagnosis

Registrants entering in 1987 are excluded from the Chronic Disease Scores data for that year because electronic data for 1986 were incomplete. There was a comparatively constant level of chronic illness at the time of diagnosis for the first 6 years of the register, followed by a downward shift to less severe comorbidity in 1993 and a year of particularly less severe comorbidity in 1994 (see table 1 on the website).

Preventive health measures

The rates of annual influenza immunizations and screening for retinopathy remained unchanged until 1994 and

1995, when formal outreach systems began (see figure 3 on the website). The annual rate of retinal screening increased from 50% (5,926/11,758) (SE ± 0.5%) to almost 68% (±0.4%) within 2 years. The proportion of registrants receiving immunizations grew from 40% (4,045/10,037) to 60% (7,886/13,099) over 4 years, as reminders were mailed to all registrants and special flu clinics were established.

Rates of annual testing for diabetes control (total glycohemoglobin, HbA_{1c}, or fructosamine) and nephropathy screening both rose between 1987 and 1996 (see figure 4 on the website). Rates of testing for glycemic control increased from about 22% (1167/5331) (±1.9%) to over 83% (10,885/13,099) (±0.3%). Rates of nephropathy screening increased from 1% (±0.5%) to 43% (5,698/13,099) (±0.4%). Annual rates of testing for lipid concentration, (37% [1994/5331] ±2.2% in 1987) increased to 56% (7,332/13,099) (±0.4%) by 1996.

Use of pharmaceuticals

Both home glucose testing and pharmaceutical treatment for hyperlipidemia increased substantially over the decade. Hyperlipidemia treatment among members without diabetes also grew but not as rapidly. The proportion of members on the diabetes register who purchased antihypertensive drugs was high initially (57% [3060/5331]; ±7%) and did not grow for registrants or members without diabetes. However, the use of angiotensin converting enzyme inhibitors grew among members with diabetes from 8.5% (453/5331) (±0.4%) to 34.8% (4558/13,099) (±0.4%), while treatment with thiazide diuretics declined. The use of angiotensin converting enzyme inhibitors also grew among those without diabetes but much less quickly (see table 2 on the website).

Shifts in antihyperglycemic purchasing also occurred. Sulfonylurea and insulin use declined somewhat among all registrants and among new members who had previously been diagnosed with diabetes. Among newly diagnosed members, insulin use dropped substantially after 1987 and then more gradually after about 1991. Metformin was quickly adopted when it became available in 1995, primarily as a second agent used in conjunction with a sulfonylurea and primarily among registrants whose disease was of longer duration.

Control of risk factors

Total cholesterol concentrations improved over the decade from a mean of 243 (±4.2) mg/dL in 1987 to 215 (±0.55) mg/dL in 1996 (see figure 5 on the website). By 1996, mean HbA_{1c} concentrations among members with diabetes had dropped to almost 8.0% (±0.02%). The proportion of members on the register in very good or excellent control of their diabetes (HbA_{1c} <8.0%) reached 56.4% (±0.5%). The blood pressure of members on the register fell from 144/82 mm Hg (± 0.81/0.43) in 1987 to 138/79 mm Hg (±0.28/0.15) in 1996 (see table 3 on the website).

Utilization of medical services

The rate of visits to the organization's emergency room fluctuated as data systems, definitions of visits, and clinic hours changed over the decade (see figure 6 on the website). Rates of emergency room visits by members with diabetes, however, dropped steadily compared with those of members without diabetes. The number of days of acute hospitalization also decreased more for members with diabetes than for members without diabetes, causing the ratio of hospital days for members with diabetes to those without to fall from 3.6 in 1987 to 2.5 in 1996 (see figure 7 on the website). The total number of outpatient visits for members with diabetes increased slightly to about 13 per year, as visits to specialists increased faster than primary care visits decreased (see figure 8 on the website). The ratio of annual visits for members with diabetes to annual visits for those without also grew slightly, ranging from 1.71 to 1.87.

For members with diabetes, mortality declined from 4.8% (±0.3%) to 3.6% (±0.2%) per year. For members without diabetes, mortality did not change. A univariate linear regression of the ratio of mortality among members with diabetes to those without plotted against time indicated that there was a significant relative improvement in mortality among members with diabetes (adjusted R^2=0.50, β=–0.05, P=0.01).

DISCUSSION

Clinical trials have shown that intensified preventive care can improve the prospects of people with diabetes.[1-3, 5] Disease management programs that incorporate these findings into routine practice are widespread, but published evaluations have been short-term and generally have not measured mortality or other final outcomes.[20-24] In this report, we describe the changes that accompanied the implementation over 10 years of a chronic disease management program for diabetes mellitus in a large nonprofit, group-model health maintenance organization.

The steady growth of the diabetes register of the organization parallels national growth trends in the prevalence of diabetes that has persisted since the 1930s.[27] The relative contributions of more effective screening, weight gain in the population, and other factors cannot be determined from our data. However, the decline over time in the chronic disease score suggests a major role for better screening, a phenomenon that has also been observed nationally.[28]

Data show sustained improvement over 10 years in processes of care, such as rates of glycemic monitoring and retinal screening, improvements in biologic risk factors (glycemia, blood pressure, and hyperlipidemia), and a relative reduction in mortality, compared to a matched control population of members without diabetes. These favorable clinical outcomes were accompanied by a reduction, relative to members without diabetes, in the use of services that are resource intensive (such as emergency room and acute hospital care) without a drop in the use of outpatient care. When considered along with other studies that show the efficacy of similar quality-improvement methods in lowering diabetic risk factors,[15-19] generally poor processes of care and risk factor levels in the community,[29-31] and the efficacy of risk-factor reduction in preventing diabetic complications,[1-3,5] they also suggest that Kaiser Permanente's quality improvement program accounts for much of the observed reduction in risk factors, hospitalization, mortality, and usage of emergency services. This supposition cannot be proved by observational data, however. Because the randomized clinical trial method is not feasible for multimodal, continually evolving institutional programs such as that of Kaiser Permanente North West, such proof may never be forthcoming for programs of this kind.

To help clarify whether observed changes resulted from the implementation of the Kaiser Permanente program, we focused our analysis on performance ratios—measurements for members with diabetes divided by measurements for matched members without diabetes. These ratios show that rates of hospitalization, use of the emergency department, and mortality dropped more rapidly among people with diabetes than among other members of the health plan; they also rule out changes in the age-sex mix of the diabetes registry as explanations for these trends.

The role of the Kaiser Permanente program in producing these results remains confounded, however, by at least three other forces. Decreasing illness levels among entrants to the registry (probably due to earlier recognition of diabetes[28]) and general improvement in diabetes care (stimulated by clinical leaders, advocates, and research publications) imply an overestimation of the influence of the Kaiser Permanente program. Contemporaneous improvement in the care of Kaiser Permanente members without diabetes, which undoubtedly occurred and would have reduced the apparent treatment effect, implies an underestimation. The net effect is unknown. At a minimum, however, our results do not rule out the hypothesis that the efforts of the health maintenance organization to improve quality decreased the use of the hospital and emergency department as well as the mortality rate.

Our observational data also do not permit us to infer which aspects of the evolving program were most powerful. Although formal outreach programs had obvious, dramatic effects on rates of retinal screening and immunization, our descriptive approach cannot tease out, for example, the roles of influenza vaccination, glucose control, and lipid management in reducing mortality and hospitalization. Experimentally controlled trials are necessary to address this kind of question.

We do not report on such an experiment, although it is our experience that effective quality improvement efforts make use of all, and any, avenues available in a given setting. In the course of implementation, synergies arise, including considerable momentum around the quality improvement effort, which in itself motivates attentiveness and change. Implementation theorists advocate just this sort of approach that is directed from within the program and takes advantage of multiple models and channels.[32,33] Evaluating the frontiers of quality improvement in diabetes care in the real world must include the study of a program that is broadly evolving, mutually interacting, and non-research controlled, but largely evidence-based.

The quality improvement approach undertaken in our study site is not necessarily superior to other possible approaches. Kaiser Permanente itself has been incompletely satisfied, and has embraced other opportunities for improvement , such as a new electronic medical record system and an agreement to link compensation to the achievement of quality-of-care goals. By late 1999, the mean HbA_{1c} in the Kaiser Permanente Northwest registry had dropped to 7.75%, and programs were in place to increase the use of aspirin prophylactically and of antihyperlipidemic agents during 2000.

We did not attempt to measure all the costs and savings associated with this program. Nevertheless, the savings on acute inpatient care that can be extrapolated from our results are equivalent to roughly 4000 days of acute care avoided per 1000 registrants over 10 years. This represents a substantial benefit for people with diabetes and purchasers of health insurance, as well as for the health maintenance organization. A formal estimate of net economic impact would compare these and other savings to direct program costs and to program-stimulated cost increases, such as the costs of increased rates of drug treatment, substitution of more expensive drugs such as statins and angiotensin converting enzyme inhibitors, and more frequent laboratory monitoring. Simulation modeling thus far suggests that the intensification of care will increase the net costs of medical care.[34-37]

CONCLUSION

We have studied processes of care, patterns of resource utilization, and clinical outcomes over 10 years in a large population-based cohort of members with diabetes. We observed progressive improvement in all areas, consistent

with the hypothesis that better organization and delivery of diabetes care will improve both clinical behavior and clinical outcomes in the long term.

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Randomized, controlled trial of glucosamine for treating osteoarthritis of the knee

ABSTRACT **Objective** To determine the effectiveness of glucosamine in reducing pain from osteoarthritis of the knee. **Design** Randomized, double-blind parallel trial of glucosamine 500 mg three times daily or a placebo for 2 months. **Setting** Veterans Affairs Medical Center, Prescott, AZ. **Participants** Ninety-eight patients aged 34 to 81 being treated for osteoarthritis of the knee. **Main outcome measures** Pain intensity both at rest and while walking as assessed by a visual analog scale at baseline and after 30 and 60 days of treatment. **Results** Forty-nine patients were randomly allocated to each group. There was no statistical difference between the two groups in scores on the visual analog scale at 30 days for resting (mean [SD] score placebo group 3.5 [2.7] vs 3.3 [2.4] glucosamine group, P=0.66) or walking (5.1 [2.6] vs 5.3 [2.4], P=0.69); there was also no difference at 60 days for resting (3.4 [2.5] vs 3.2 [2.5], P=0.81) or walking (4.9 [2.2] vs 4.9 [2.8], P=0.90). There was also no statistical difference between groups in the mean change from baseline in scores on the visual analog scale (mean [SD] change for walking at 60 days placebo group −1.5 [2.5] vs glucosamine group −1.4 [3.0], P=0.77). Two participants taking glucosamine and 4 taking placebo withdrew from the study due to adverse side effects (P=0.67). **Conclusion** Glucosamine was no better than placebo in reducing pain from osteoarthritis of the knee in this group of patients.

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Glucosamine sulfate is widely purported in the media and on the Internet to be an effective treatment for osteoarthritis. Its popularity can be traced, in part, to the success of glucosamine in veterinary medicine and to the anecdotal reports of patients with arthritis.[1] Some controlled clinical trials have examined the efficacy of glucosamine in treating osteoarthritis.[2-6] These trials have identified some benefit in using oral or intra-articular glucosamine when compared with nonsteroidal anti-inflammatory drugs or placebo. Despite these data, glucosamine is not recommended as a treatment by the American College of Rheumatology.[7] Nevertheless, it may offer a comparatively safe alternative to nonsteroidal anti-inflammatory drugs for treating osteoarthritis, and further study is warranted, especially in veterans, who tend to be older and have more comorbidity than the general population.

PARTICIPANTS AND METHODS

Selection of participants

Patients were eligible to participate in the study if they had a history of osteoarthritis of the knee and had radiographic findings consistent with the disease. Patients were recruited by referral from primary care providers in the outpatient clinics of the medical center. Knee radiographs were graded by a radiologist who was blinded to the purpose of the study. Grading was based on criteria described by Kellgren and Lawrence.[8] Grade 0 indicated no arthropathy; grade 4, severe arthropathy. Patients who had been treated earlier with either glucosamine or chondroitin, or both, who were not ambulatory, or who had radiographic findings classed as less severe than grade 1 were excluded from the study. A human studies committee approved this study, and informed consent was obtained from all participants.

Allocation and treatment

Participants were randomly allocated in a double-blind design to treatment with either 500 mg glucosamine (Applehart Laboratories, Bedford, NH) three times daily or a placebo. Randomization was performed using a computer generated list of random numbers. Treatment lasted 2 months. Glucosamine was given with or without food. Patients who were taking other analgesics were instructed to continue them for the duration of the study.

Measurement of pain intensity

Participants were evaluated at the beginning of the study and at 30 and 60 days after starting treatment. Pain intensity was assessed with a visual analog scale. Numerous

Summary points

- Glucosamine has been reported to be effective in reducing pain in osteoarthritis
- Controlled clinical trials have found that glucosamine may be effective in treating osteoarthritis when compared with nonsteroidal anti-inflammatory drugs or placebo
- Glucosamine was no more effective than placebo after 2 months of treatment for osteoarthritis of the knee in this study of older patients

trials have validated the visual analog scale as a means of evaluating pain intensity, especially for subjective knee complaints.[9, 10] Participants were instructed to make a mark on a horizontal line that was 10 cm long to reflect the average rating of the discomfort they had experienced during the previous week. The mark on the line was measured from the left using a metric ruler; a mark at 0 was classed as "no discomfort" and at 10 cm as "severe discomfort." Participants completed two visual analog assessments at each visit, one representing pain intensity while at rest and the other representing pain while walking. Side effects were assessed at each visit by one of us (JPR) asking the patient if they had experienced any changes in their physical symptoms since the previous visit. Side effects were noted on the same form used for data collection

Data analysis

Demographic data were compared between groups using an independent Student *t* test for means (age, baseline visual analog scores, duration of arthritis) and a z test for proportional data (for example, the percentage taking nonsteroidal anti-inflammatory drugs) using SigmaStat software (Jandel, San Rafael, CA). Scores on the visual analog scale at rest and while walking were averaged, and means between treatment groups were compared at each visit using a one-way analysis of variance. Changes in scores from baseline were also computed, and the means were compared using a one-way analysis of variance. Statistical significance was set at $\alpha = 0.05$. We calculated that an absolute difference of 1.1 on the visual analog scale should be detectable if we evaluated 100 participants, assumed a standard deviation of 2, a power of 80%, and an α of 0.05.[11] The dropout rate from side effects was compared between treatment groups using a z test.

RESULTS

Altogether, 114 participants were enrolled in the study. They were well matched with respect to demographic data, duration of arthritis, baseline score on the visual analog scale, the concomitant use of analgesics, and radiographic stage (table 1). The mean (SD) age of participants in the placebo group was 64 (11) years and in the glucosamine group was 63 (12). The mean (SD) duration of arthritis in the placebo group was 14 (13) years and in the glucosamine group 12 (10). All participants met the criteria for knee osteoarthritis as described by the American College of Rheumatology.[7] Five patients in each group were lost to follow up and were not included in the analysis. Data were analyzed on 98 patients, 49 in each group.

No statistical difference was noted between the glucosamine group and the placebo group in mean scores for resting and walking at the 30-day and 60-day assessment (mean [SD] score for resting at 60 days: placebo group 3.4 [2.5] vs 3.2 [2.5] glucosamine group, P=0.81; score for walking: 4.9 [2.2] vs 4.9 [2.8], P=0.90) (table 2). There was also no statistical difference between the groups when the mean change in scores from baseline was calculated and compared (mean [SD] change for walking at 60 days: placebo group −1.5 [2.5] vs −1.4 [3.0] glucosamine group, P=0.77) (table 3). There was a similar distribution of change in scores at the 60-day assessment for both resting and walking (figures 1 and 2).

Seventeen patients (34%) taking glucosamine experienced side effects compared with 11 (23%) taking pla-

Table 1 *Demographic and baseline characteristics of 98 patients with osteoarthritis of the knee who were randomly allocated to treatment with either placebo or 500 mg glucosamine three times daily*

Characteristics	Treatment: Placebo (n = 49)	Treatment: Glucosamine (n = 49)	P value
Number of men	46	47	
Mean (SD) age (years)	64 (11)	63 (12)	0.74
Mean (SD) duration of arthritis (years)	14 (13)	12 (10)	0.44
Mean (SD) weight (kg)	91 (15)	91 (20)	0.98
Mean (SD) score of pain intensity at baseline*:			
Resting	3.6 (2.8)	3.9 (2.4)	0.56
Walking	6.4 92.5)	6.4 (2.5)	0.96
Number (%) taking analgesics:			
NSAID	16 (32)	17 (34)	0.99
Acetaminophen	10 (20)	8 (16)	0.80
Hydrocodone and acetaminophen	2 (4)	3 (6)	0.99
Number (%) at each radiographic stage:			
Grade 1	15 (30)	19 (40)	0.46
Grade 2	9 (19)	9 (18)	0.86
Grade 3	17 (35)	17 (35)	0.81
Grade 4	8 (16)	3 (7)	0.35

NSAID = nonsteroidal anti-inflammatory drugs
*Pain intensity was measured with a visual analog scale; a score of 0 indicated "no discomfort" and a score of 10 indicated "severe discomfort."

Table 2 *Scores of pain intensity as measured with a visual analog scale**

Mean (SD) score	Treatment Placebo (n = 49)	Glucosamine (n = 49)	P value
At 30 days:			
Resting	3.5 (2.7)	3.3 (2.4)	0.66
Walking	5.1 (2.6)	5.3 (2.4)	0.69
At 60 days:			
Resting	3.4 (2.5)	3.2 (2.5)	0.81
Walking	4.9 (2.2)	4.9 (2.8)	0.90

*A score of 0 indicated "no discomfort" and a score of 10 indicated "severe discomfort."

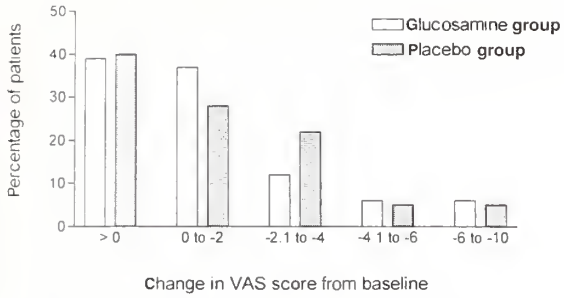

Figure 1 Distribution of changes in scores of pain intensity at rest (60-day visit), as measured by a visual analog scale (VAS) among patients with osteoarthritis of the knee. A score of 0 indicates "no discomfort" and 10 indicates "severe discomfort."

cebo. Most side effects in both groups were mild and self-limiting; side effects included loose stools, nausea, heartburn, and headache. Two participants taking glucosamine withdrew from the study because of side effects. One patient had significant diarrhea and the other, dizziness. Side effects subsided after treatment was stopped. Four participants in the placebo group also withdrew because of side effects which included rash, sedation, diarrhea, and constipation. The rate of withdrawal as a result of side effects was not statistically different between the groups (P=0.67) (data not shown).

DISCUSSION

In this study glucosamine had little effect on the intensity of pain in patients with osteoarthritis of the knee. This is the first study to report negative findings in the use of oral glucosamine to treat osteoarthritis, and thus our findings contradict those reported in other prospective trials of this treatment. One trial of 200 patients showed that glucosamine 1.5 g/day was as effective as ibuprofen 1.2 g/day in bringing about a reduction in pain scores on the Lequesne index.[2] A trial of 40 patients with osteoarthritis of the knee found that glucosamine 1.5 g/day was statistically superior to ibuprofen 1.2 g/day in reducing pain scores at 8 weeks.[3] Glucosamine was less effective than ibuprofen when patients were assessed at 4 weeks. The largest study included 252 patients and found that glucosamine 1.5 g/day was superior to placebo in reducing pain scores on the Lequesne index.[4]

It is not clear why there is disagreement between the results of our study and those of previous investigations. In this study, patients tended to be older, heavier, and had had arthritis longer than participants in other trials, suggesting that our patients had more pronounced arthropathy, which can be seen when radiographic findings from this study are compared to the largest placebo-controlled study.[4] Although methods of grading knee radiographs differed slightly between studies, more patients in our study had more severe disease than patients in other studies, suggesting more pronounced joint pathology. It is possible that patients with more severe disease may not respond as readily to glucosamine as patients with less severe arthropathy. This would make theoretical sense in that glucosamine is believed to be a precursor of proteoglycans. Proteoglycans are thought to be instrumental in helping cartilage retain water and in promoting formation of an elastic layer, factors which may improve the functional characteristics of cartilage.[12] Older patients with a longer history of arthritis may have more damage to their

Table 3 *Mean change from baseline in score of pain intensity as measured with a visual analog scale**

Mean (SD) change	Treatment Placebo (n = 49)	Glucosamine (n = 49)	P value
At 30 days:			
Resting	0.18 (2.5)	0.71 (2.3)	0.28
Walking	1.2 (2.6)	1.1 (2.0)	0.91
At 60 days:			
Resting	0.59 (2.9)	0.73 (2.7)	0.81
Walking	1.5 (2.5)	1.4 (3.0)	0.77

*A score of 0 indicated "no discomfort" and a score of 10 indicated "severe discomfort."

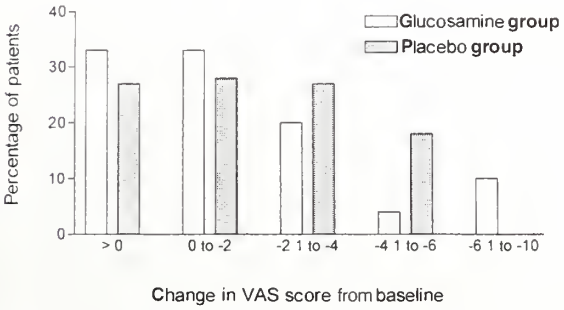

Figure 2 Distribution of changes in scores of pain intensity while walking (60-day visit), as measured by a visual analog scale (VAS) among patients with osteoarthritis of the knee. A score of 0 indicates "no discomfort" and 10 indicates "severe discomfort."

cartilage and the cartilage could thus be less responsive to the effects of glucosamine. Additional studies are required to examine the effects of glucosamine treatment in patients with osteoarthritis of a longer duration.

Another reason for our negative results could be that 2 months of treatment was insufficient to effect clinical improvement in our patients. Other studies involving apparently healthier patients have found clinical improvement within 4-8 weeks of initiating treatment. The largest study of glucosamine identified significant benefit when it was compared with placebo at 4 weeks of treatment but not in the preceding weeks.[4] One trial found superior pain relief after 8 weeks of treatment with glucosamine when compared with ibuprofen.[2] The efficacy of glucosamine when given for longer than 8 weeks is uncertain.

Any trial that has a negative finding raises the prospect of a type II error. With 100 patients, we estimated that we would have an 80% chance of detecting a difference between the two groups of 1.1 points in scores on the visual analog scale. This would have represented a 31% reduction in pain scores at rest and a 21% reduction while walking when compared with placebo. It is difficult to assess what change in score is clinically significant when measuring the intensity of pain. One large study in which patients with knee osteoarthritis were treated with piroxicam used a 30% difference in scores as an indicator of efficacy[13]; piroxicam achieved this efficacy measure more often than placebo. Another large study using oxaprozin and nabumetone found a statistically significant 35% to 48% difference from baseline in scores on the visual analog scale.[14] We observed practically no difference between the groups when absolute visual analog scores were compared. There was a slight difference in favor of glucosamine when the change in score was compared with the score at rest, however, this did not approach statistical significance. We believe that a much larger cohort of patients would be necessary to achieve significance in a trial of this sort in a similar group of patients.

It is unclear whether the addition of chondroitin sulfate to glucosamine would have influenced the outcome of this study. This combination is available in health food stores and is advertised extensively. Chondroitin has been shown to stimulate the production of proteoglycans and hyaluronic acid and to inhibit the proteolytic enzymes which may damage cartilage.[15] Chondroitin has been shown to be more effective than placebo in reducing pain in patients with osteoarthritis of the knee.[16, 17] Only one controlled study has compared this combination with placebo in patients with osteoarthritis.[18] In this double-blind crossover study of 21 servicemen glucosamine with chondroitin was superior to placebo in reducing scores of pain intensity on the visual scale after 8 weeks of treatment. It is not clear if chondroitin contributed to the reduction in pain found in this study since other trials have suggested that 3-6 months of treatment are needed to derive any benefit from this compound. The National Institutes of Health are planning a study of 1000 patients that will compare the efficacy of glucosamine, glucosamine and chondroitin, and placebo in the treatment of osteoarthritis to clarify the role of combination treatment. In our patients with osteoarthritis of the knee glucosamine was no better than placebo in reducing the intensity of pain.

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COMMENTARY

Use of alternative products: where's the beef?

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The paper by Rindone et al raises interesting issues regarding the management of osteoarthritis (degenerative joint disease) using an alternative medicine. The authors do discuss some of the weaknesses of the study and point out that a larger controlled trial showed glucosamine to be superior to placebo. An additional drawback of the study is that over 50% of the patients were receiving other analgesics. Although there was no difference in analgesic use between the glucosamine and placebo group, it would be interesting to see if the patients that did not receive other analgesics might have had a better response to glucosamine. Despite the inherent weakness of the study, Rindone and colleagues should be credited with performing a "real world" clinical trial. I believe the results to be meaningful, and they should be used when counseling patients about the use of glucosamine.

Many clinicians are struggling to learn more about alternative practices and products, to understand better what patients are using and doing, and to provide rational advice and counseling about the use of alternative products. Eisenberg et al documented the rising use of alternative medicine in the 1990s, with over 12% of patients surveyed using at least one herbal product.[1] Less than half of patients are willing to disclose the use of these products to their physician. A more recent survey commissioned by the Kaiser Family Foundation showed that at least 50% of persons surveyed use a dietary supplement occasionally.[2]

Much speculation surrounds the reasons for the increasing use of alternative products. Although many clinicians likely prefer to ascribe this increased popularity to a populace being suckered by unscrupulous individuals, I believe the principal reason for patients seeking alternative therapy is their dissatisfaction with mainstream health care.

There is no question, however, that patients are being drawn to the use of alternative medicine because of the voluminous information made available about these products. Most of this information is, at best, unfiltered, a necdotal, and thinly disguised advertising. It is probably no coincidence that the development and popularity of the Internet has paralleled that of the alternative medicine movement. One need only research any alternative medicine product (glucosamine or any other) to be impressed with the sheer volume of information that is available to many of our patients. And it is clear that this industry is big business. Patients are spending over $40 billion per year on alternative products, some of whom cannot afford the added expense.

The passage of the 1994 Dietary Supplement Health and Education Act (DSHEA) has played a large role in the expanding use of alternative products. Under this statute, manufacturers of dietary supplements need not demonstrate the safety and efficacy of their products. The burden of proof to show a product is harmful was given to the Food and Drug Administration (FDA). Manufacturers of dietary supplements use thinly disguised indications to market their products (for example, "to promote liver health"). If one accepts that some of these products are pharmacologically active, it is not in the best interest of the public to have their safety so loosely regulated.

As with the study by Rindone et al, trials with popular alternative products are slowly being published in peer-reviewed journals, which is exactly what is needed. As we move toward a greater emphasis on evidence-based medicine, we must use these same principles in evaluating alternative products. Potential adulteration with toxic substances is an important consideration. One recent study showed a high frequency of adulteration with drugs or heavy metals in products imported from Asia.[3]

As with any drug, we cannot assume that any pharmacologically active substance is safe until evidence exists to that effect. Several published reviews identify alternative products known not to be safe.[4-7] What about interactions with conventional drugs? Other than a few known interactions (such as *Gingko biloba* and garlic increasing the risk of bleeding with warfarin), we know little about potential interactions. Suspected adverse reactions and drug interactions should be reported to the FDA MedWatch program.

How can the average clinician deal with these issues? We must realize that our patients are using alternative products and ask specifically about their use when obtaining a history. Clinicians need to be open-minded and understanding about patients' use of these products. One should review with the patient what evidence exists for a particular product. Ultimately, we will no longer be discussing alternative versus conventional treatment. We will discuss treatments that work and those that do not.[8] The "beef" is in the evidence.

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Research Digest

Magnesium sulfate is effective for severe acute asthma treated in the emergency department

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Cochrane Library. Issue 1. Oxford (England): Update software, 1999.

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QUESTION

What is the effectiveness of intravenous magnesium sulfate in patients with acute asthma who were treated in the emergency department?

DATA SOURCES

Studies were identified from the Cochrane Airways Review Group Register, MEDLINE, EMBASE/Excerpta Medica, CINAHL (Cumulative Index to Nursing and Allied Health), and the *Cochrane Library.* We also manually searched 20 high-quality respiratory journals and bibliographies of relevant articles and contacted authors and content experts.

STUDY SELECTION

Studies were selected if they were randomized controlled trials or quasi-randomized trials, included adults or children seen at an emergency department with acute asthma, and compared the use of intravenous magnesium sulfate with placebo.

DATA EXTRACTION

Data on study and patient characteristics, hospital admissions, pulmonary function, vital signs, and adverse events were extracted.

MAIN RESULTS

We reviewed 27 studies for inclusion, and 7 trials (665 patients; 5 trials of adult and 2 of pediatric patients, with 6 from the United States and 1 from India) met the inclusion criteria. Analyses of all patients and of patients with severe asthma showed a reduction in hospital admission rates (table), whereas no difference was shown for patients with mild to moderate asthma. Studies that included all patients showed no differences in measures of pulmonary function (peak expiratory flow rate or forced expiratory volume in 1 second) or vital signs (heart rate, respiratory rate, or blood pressure). In studies of patients with severe asthma, the peak expiratory flow rate improved by 52 L/min (95% confidence interval 27-78 L/min; 3 studies) and the forced expiratory volume in 1 second by 8% of the predicted value (95% confidence interval 5%-12%; 3 studies). Data were insufficient to assess adverse events.

CONCLUSION

The use of intravenous magnesium sulfate reduces the rate of hospital admissions and improves pulmonary function in patients with severe acute asthma treated in the emergency department.

*Magnesium sulfate vs placebo for hospital admissions among patients with acute asthma at end of study**

Patients	Weighted event rates: Magnesium sulfate	Weighted event rates: Placebo	Relative risk reduction (95% CI)	Number needed to treat (CI)
All	23%	45%	30% (2 to 49)	5 (3 to 63)
Severe asthma	51%	91%	44% (29 to 56)	3 (2 to 4)

*Relative risk reduction, 95% confidence interval, and number needed to treat calculated from data in article

COMMENTARY

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The systematic review by Rowe and colleagues is an important addition to the management of acute asthma. Optimal therapy currently consists of bronchodilation with short-acting β_2 agonists, adjunct therapy with ipratropium bromide (in patients with more severe disease), oxygen, and corticosteroids.[1] The results of this review indicate that magnesium sulfate use reduces hospital admission in patients with a forced expiratory volume in 1 second of less than 30% at presentation or those who do not respond to initial treatment or improve beyond a value of 60% after 1 hour.

It is tempting to extrapolate from these data that all patients with moderately severe acute asthma should receive magnesium sulfate. An important consideration, however, is the discretionary use of adjunct therapies, such as aminophylline (2 studies) and ipratropium bromide (1 study), included in the meta-analysis. Both of these interventions have been shown to reduce hospital admission rates without improving lung function.[2-4] Until patients with less severe obstruction treated with these therapies show greater benefit with the incremental addition of magnesium sulfate than with placebo, magnesium sulfate should be reserved for patients who fulfill the criteria given above.

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Ovarian cancer screening was feasible but did not decrease incidence of index cancer or mortality

QUESTION

What is the feasibility and effectiveness of screening for ovarian cancer in postmenopausal women?

DESIGN AND SETTING

Randomized (concealed), unblinded, controlled trial with 7-year follow up in the United Kingdom.

PARTICIPANTS

Altogether 22,000 women who were ≥45 years of age and were postmenopausal were invited to participate; 21 935 were randomly allocated to treatment. Exclusion criteria were having had a bilateral oophorectomy or ovarian cancer. All participants were traced through the National Health Service Central Register and the Family Health Services Authority.

INTERVENTION

A total of 10,958 women were allocated to annual screening for ovarian cancer for 3 years; 10,977 were followed up with no screening (control group). Initial screening involved measuring serum CA 125 antigen. Women with CA 125 of ≥30 U/mL were recalled for pelvic ultrasonography. Women with abnormal ultrasonographic results (ovarian volume ≥8.8 mL) had a repeat scan to confirm the findings and were then referred for surgery.

MAIN OUTCOME MEASURES

Incidence of index ovarian cancer and mortality.

MAIN RESULTS AND CONCLUSIONS

Of 10,958 women allocated to screening, 9364 (86%) completed ≥1 screen. Of 29 women who had surgical investigation, six had an index cancer. The positive predictive value of screening was 20.7%. Ten more women in the screening group developed cancer during follow up. Twenty women in the control group developed cancer. Among the women who developed cancer, survival was longer in those who received screening than in those in the control group (73 vs 42 months, P=0.011), but mortality from index cancers did not differ between the groups (P=0.083) (table). In postmenopausal women, ovarian cancer screening was feasible and had a positive predictive value of about 21%. Survival was longer in women who were screened, but no difference in mortality was seen between screened and control groups.

Screening versus no screening for death from index ovarian cancer at 7 years

Screening	No screening	Relative risk reduction (95% CI)	Number needed to treat
0.08%	0.16%	50% (−9 to 77)	Not significant

Relative risk reduction, 95% confidence interval, and number needed to treat calculated from data in article

COMMENTARY

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Jacobs er al conclude that screening for ovarian cancer by measuring serum CA 125 and following this with pelvic ultrasonography is feasible and jusrifies a larger randomized trial to assess the effects on mortality. However, despite this trial, the benefits of population-based screening for ovarian cancer remain uncertain.

The participants were a highly motivated group of volunteers recruited from a previous study. About 86% of participants completed ar leasr one screening. The applicability to a more general population is unknown. Although the study found an increase in median survival, no increase in overall survival was found. The authors note that the study was of insufficienr size to show a survival advantage. In the approximately 11,000 women in the screened group, only 6 of 16 cases of index cancer diagnosed were found as a result of screening. In contrast, annual fecal occult blood testing for colorectal cancer results in an estimated 130 lives saved per 10,000 patients screened.[1]

Ovarian cancer is a comparatively rare disease, with an incidence of 11.2/100,000 in North America.[2] The problems inherent in screening for diseases of low prevalence have been illustrated in a decision analysis of the effectiveness of screening for ovarian cancer.[3] The average life expectancy in a population of screened women 65 years of age was estimated ro increase by only three-quarters of one day of life. Given the small potential benefit for women with average risk, it seems that screening for ovarian cancer should be deferred at this time.

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Best Practice

CLINICAL EVIDENCE

Chronic prostatitis

This article comes from *Clinical Evidence*, a new resource for clinicians produced by the BMJ Publishing Group. *Clinical Evidence* is an extensively peer-reviewed publication that summarizes the best available evidence on the effects of common clinical interventions gleaned from thorough searches and appraisal of world literature. The second issue is now available with an updated and expanded range of topics. Please visit www.evidence.org for more information.

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Questions

- Effects of treatments for chronic bacterial prostatitis
- Effects of treatments for chronic abacterial prostatitis

Interventions

CHRONIC BACTERIAL PROSTATITIS

Likely to be beneficial
- Antimicrobial drugs
- Alpha blockers

Unknown effectiveness
- Local injection of antimicrobial agents
- Transurethral resection
- Radical prostatectomy

CHRONIC ABACTERIAL PROSTATITIS

Likely to be beneficial
- Alpha blockers

Unknown effectiveness
- Transurethral microwave thermotherapy
- Prostatic massage
- Sitz baths
- Biofeedback
- Allopurinol

DEFINITION

Chronic bacterial prostatitis is characterized by a culture of expressed prostatic secretions that is positive for pathogens. It can be symptomatic—recurrent urinary tract infection or suprapubic, lower back, or perineal pain—asymptomatic, or associated with minimal urgency, frequency, and dysuria. Chronic abacterial prostatitis is characterized by pelvic or perineal pain, often associated with urinary urgency, nocturia, weak urinary stream, frequency, dysuria, hesitancy, dribbling after micturition, interrupted flow, and inflammation (white blood cells) in prostatic secretions. Symptoms can also include suprapubic, scrotal, testicular, penile, or lower back pain or discomfort, (known as prostatodynia) in the absence of inflammation in prostatic secretions.

INCIDENCE AND/OR PREVALENCE

A community-based study estimated that 9% of men have a diagnosis of chronic prostatitis at any one time.[1] Another study found that, of men with genitourinary symptoms, 8% presenting to urologists and 1% presenting to primary care physicians are diagnosed as having chronic prostatitis.[2] Most cases of chronic prostatitis are abacterial. Acute bacterial prostatitis, although easy to diagnose and treat, is rare.

ETIOLOGY

Organisms commonly implicated in bacterial prostatitis include *Escherichia coli*, other Gram-negative Enterobacteriaceae, occasionally Pseudomonas species, and rarely, Gram-positive enterococci. The cause of abacterial prostatitis is unclear, but autoimmunity may be involved.[3]

PROGNOSIS

In a 1996 study, chronic abacterial prostatitis had an effect on quality of life similar to that from angina, Crohn disease, or a myocardial infarction.[4]

AIMS

Treatment goals are to relieve symptoms and eliminate infection where present, with minimum adverse effects, as measured by decreased symptoms (improved symptom scores or bother scores) and improved quality of life, urodynamics, and rates of bacteriologic cure (clearance of previously recorded organisms from prostatic secretions).

METHODS

We searched MEDLINE to July 1998. A full *Clinical Evidence* search and appraisal was performed in June 1999. No systematic reviews were identified. We reviewed all relevant randomized controlled trials (RCTs) identified.

Summary points

In men with chronic bacterial prostatitis

- Antimicrobial drugs have not been adequately evaluated. Retrospective cohort studies report cure rates of 0% to 90%, depending on the drug used and the duration of treatment. The limited evidence available suggests that quinolones are more effective than the combination of trimethoprim and sulfamethoxazole
- The local injection of antimicrobial agents is not more effective than oral or parenteral antimicrobial treatment
- Limited evidence from one randomized controlled trial suggests that adding alpha blockers to antimicrobial treatment may improve outcome and reduce recurrence
- Transurethral resection and radical prostatectomy have not yet been adequately evaluated. Limited evidence suggests that transurethral resection may cure some cases of refractory, chronic bacterial prostatitis

In men with chronic abacterial prostatitis

- Limited evidence that alpha blockers may lessen symptoms
- Thermotherapy, prostatic massage, sitz baths, and biofeedback have not yet been formally evaluated

QUESTION: What are the effects of treatments for chronic bacterial prostatitis?

OPTION: ANTIMICROBIAL DRUGS

Summary

Antimicrobial drugs have not been adequately evaluated in men with chronic bacterial prostatitis. Retrospective cohort studies report cure rates (clearing prostatic secretions of previously recorded organisms) of 0% to 90%, depending on the drug used and the duration of treatment. The limited evidence available suggests that quinolones are more effective than trimethoprim-sulfamethoxazole.

Benefits

Trimethoprim-sulfamethoxazole: We found no systematic review and no RCTs. A nonsystematic review identified 10 retrospective cohort studies involving 135 men with bacteriologically confirmed prostatitis treated with trimethoprim-sulfamethoxazole, 160 mg/800 mg twice a day for 10 to 140 days.[5] The studies reported bacteriologic cure rates of 0% to 67%. More than 30% of men were cured when treated for at least 90 days.

Quinolones: We found no systematic review or RCTs. A review summarized three retrospective cohort studies involving 106 men treated with norfloxacin, 400 mg twice a day for 10, 28, and 174 days.[6] The studies reported cure rates of 64% to 88%. We also found six retrospective cohort studies involving 141 men treated with ciprofloxacin, 250 to 500 mg twice a day for 14 to 259 days, with cure rates of 60% to 75%.

Amoxicillin and clavulanate potassium (combination product) and clindamycin hydrochloride: We found no systematic review and no RCTs. One cohort study included 50 men whose bacterial pathogens were resistant to empiric treatment with quinolone. The expressed prostatic secretions from 24 of these men showed high colony counts of Gram-positive and Gram-negative anaerobic bacteria either alone (18 men) or in combination with aerobic bacteria (6 men). After treatment with either amoxicillin-clavulanate or clindamycin hydrochloride for 3 to 6 weeks, all patients had a decrease or total elimination of symptoms, and no anaerobic bacteria were detected in prostatic secretions.[7]

Harms

The studies of trimethoprim-sulfamethoxazole did not report adverse effects. In the other studies, toxic effects from quinolones were rare. Late relapse (6-12 months after treatment) was common.

Comment

Higher cure rates with quinolones may be explained by greater penetration into the prostate.[8] We reviewed only studies that used standard methods to localize infection to the prostate.[9]

OPTION: LOCAL INJECTION OF ANTIMICROBIALS

Summary

We found no good evidence that the local injection of antimicrobial agents is more effective than oral or parenteral antimicrobial treatment.

Benefits

We found no systematic review and no RCTs. In one small cohort study of 24 men with refractory chronic bacterial prostatitis, eradication of infection was eventually achieved after an unstated period in 15 men with a regimen of gentamicin sulfate (160 mg) plus cefazolin sodium (3 g) administered directly into the prostate through the perineum.[10]

Harms

Although not reported in this study, infection is a possible risk of this invasive procedure.

Comment

None.

OPTION: ALPHA BLOCKERS

Summary

Limited evidence from one RCT suggests that adding alpha blockers to antimicrobial treatment may improve

outcome and reduce recurrence in men with chronic bacterial prostatitis.

Benefits
We found no systematic review. We found one RCT of alpha blockers (terazosin, either 1-2 or 2.5 mg daily, or alfuzosin, 2.5 mg once or twice a day) in 270 men with bacterial or abacterial prostatitis or prostatodynia.[11] Antimicrobials were given to all men with culture of expressed prostatic secretions that were positive for pathogens and to half of those with inflammatory expressed prostatic secretions. Of men with bacterial prostatitis, those given alpha blockers and antimicrobials had significantly higher rates of clinical improvement and significantly lower rates of recurrence (assessed by culture of expressed prostatic secretions) than those given antimicrobials alone ($P = 0.02$, with no relative risk or confidence interval given).

Harms
No adverse effects of alpha blockers were reported in this study.[11]

Comment
None.

OPTION: TRANSURETHRAL RESECTION
Summary
We found insufficient evidence on the effects of transurethral resection of the prostate in men with chronic bacterial prostatitis. Limited evidence from one retrospective cohort study suggests that it may cure some men with refractory chronic bacterial prostatitis.

Benefits
We found no systematic review, RCTs, or prospective cohort studies. One retrospective cohort study reported 40% to 50% cure rates in 50 men with chronic prostatitis treated with transurethral resection. However, proof of bacterial prostatitis in many of the men was not shown.[12]

Harms
Long-term morbidity from transurethral resection is low. In a trial of men with benign prostatic hypertrophy, no difference was found in the incidence of impotence or urinary incontinence with transurethral resection or watchful waiting.[13]

Comment
Bigger studies are needed to identify the true risk of urinary incontinence after transurethral resection.

OPTION: RADICAL PROSTATECTOMY
Summary
Radical prostatectomy is a treatment of last resort. Its use in men with chronic prostatistis has not been formally evaluated.

Benefits
We found no RCTs. We found one report of radical prostatectomy in two young men whose refractory bacterial prostatitis caused relapsing hemolytic crises.[14]

Harms
Radical prostatectomy can cause impotence (9%-75%, depending on age)[15] and varying degress of urinary stress incontinence (8%).[16]

Comment
None.

QUESTION: What are the effects of treatments for chronic abacterial prostatitis?

OPTION: ALPHA BLOCKERS
Summary
Limited evidence from one RCT suggests that alpha blockers may relieve symptoms in men with nonbacterial prostatitis.

Benefits
We found no systematic review. We found one RCT of the use of alpha blockers (terazosin, either 1-2 or 2.5 mg daily, or alfuzosin, 2.5 mg once or twice a day) in 270 men with bacterial or abacterial prostatitis or prostatodynia.[11] Antimicrobial agents were given to all men with a culture of expressed prostatic secretions that was positive for pathogens and to half of those with inflammatory expressed prostatic secretions. Of men with abacterial prostatitis, those given alpha blockers had significantly lower rates of symptomatic recurrence than those given either no treatment or antimicrobials ($P < 0.001$, with no relative risk or confidence interval given).

Harms
No adverse effects of alpha blockers were reported.[11]

Comment
None.

OPTION: TRANSURETHRAL MICROWAVE THERMOTHERAPY
Summary
We found insufficient evidence of the effects of thermotherapy in abacterial prostatitis. One small RCT found that it relieved symptoms.

Benefits

We found no systematic review. We found one RCT comparing transurethral microwave thermotherapy with sham treatment in 20 men.[17] Participants were assessed blindly using a symptom severity index and symptom frequency questionnaire. Seven of 10 men in the treatment group improved significantly during a mean of 21 months' follow up compared with 1 of the 10 men in the group receiving sham treatment.

Harms

Four men had transient (resolved in 3 weeks) adverse reactions, including hematuria (two men), urinary tract infection, impotence, urinary retention, urinary incontinence, and premature ejaculation; all occurred in one man each, except for hematuria.[17]

Comment

The trial measured only changes in clinical symptoms to determine efficacy. Thermotherapy caused persistent elevation of leukocyte counts in the prostatic fluid, which could indicate tissue damage.

OPTION: ALLOPURINOL

Summary

We found no good evidence of the effects of allopurinol in men with chronic abacterial prostatitis.

Benefits

We found one systemic review, which identified one RCT.[18] Fifty-four men were initially enrolled in the study and divided into three groups: one group was treated with allopurinol, 600 mg daily; one group was treated with allopurinol, 300 mg daily; and one group was given placebo. Thirty-four men completed the study, which lasted 240 days. There was a significant effect of allopurinol on urate concentrations in expressed prostatic secretions; men in treatment groups had a lower ratio of urate to creatinine in their expressed prostatic secretions than did the placebo group. Moreover, the degree of discomfort score was lower among the groups receiving allopurinol than the group given placebo ($P = 0.02$).

Harms

No men receiving allopurinol reported any significant adverse effects.

Comment

From the data presented, it is not clear that the decreases in urate concentration in expressed prostatic secretion led directly to symptom relief. Moreover, the symptom score was not validated.[18]

OPTION: OTHER INTERVENTIONS

Summary

Prostatic massage, sitz baths, and biofeedback (training the patient to contract and relax the pelvic floor muscles to interrupt the attacks of myofascial pain) have not yet been formally evaluated in men with nonbacterial prostatitis.

Benefits

We found no systematic review or RCTs.

Harms

Insufficient data.

Comment

None.

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MEDICINE CABINET

How medications affect thyroid function

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Abnormal results of thyroid function tests are common in clinical practice. The diagnosis of thyroid dysfunction is easily made, especially if the clinical signs and symptoms of thyroid dysfunction are also present. In elderly patients aged 65 years and older, who often have atypical presentations, the diagnosis of thyroid dysfunction is more difficult. Sometimes laboratory findings are abnormal because of a patient's use of medications or the presence of unrelated and nonthyroidal medical illnesses. Many abnormalities identified by thyroid laboratory tests can be caused by various illnesses that do not directly involve the thyroid gland. This "euthyroid sick syndrome" occurs in as many as 70% of patients who have been admitted to a hospital.[1,2] Recognition is critical because therapy is not necessary and may be detrimental. There results of thyroid function tests often revert to normal once the patient recovers from the illness.

In this review, I focus on medications that interfere with the proper interpretation of thyroid function test results, cause thyroid illnesses, influence levothyroxine requirements, and impair absorption of exogenous levothyroxine.

THYROID FUNCTION TESTS

Common laboratory tests used in the assessment and diagnosis of thyroid disorders include measuring the circulating thyroid hormone concentrations, evaluating the integrity of the pituitary negative-feedback system, measuring thyroid antibody concentrations, and evaluating radioactive iodine uptake and scans. Tests to measure circulating thyroid hormone concentrations can include total thyroxine (T_4), total triiodothyronine (T_3), free thyroxine index, free T_4 (FT_4), and free T_3 (FT_3).

Total T_4 and total T_3 measurements are less accurate because several medications can interfere (for example, estrogen and estrogen-containing birth control pills, tamoxifen citrate, heroin, methadone hydrochloride, fluouracil, mitotane, androgens, anabolic steroids, nicotinic acid, and glucocorticoids) scan medical conditions (such as the nephrotic syndrome) that alter thyroid-binding globulin and confuse results. Measurement of the total T_3 level is still frequently used because many laboratories cannot perform FT_3 measurements.

The measurement of the free T_4 index and FT_4level should replace measurements of the total T_4 level. The free hormone concentrations also accurately represent the thyroid state.

The integrity of the pituitary negative-feedback system is evaluated by measuring levels of thyrotropin (the thyroid-stimulating hormone). This is the most sensitive test for screening, diagnosis, and monitoring of thyroid dysfunction because thyrotropin levels may become abnormal before corresponding changes occur in the circulating free thyroid hormone levels. The diagnosis of primary hypothyroidism is confirmed by raised concentrations of thyrotropin and subnormal FT_4 concentrations. Similarly, findings of an undetectable concentration of thyrotropin and raised FT_4 concentration are diagnostic of hyperthyroidism. In subclinical thyroid disease, however, the FT_4 concentration remains normal whereas in subclinical hypothyroidism, the thyrotropin concentration is raised and, in subclinical hyperthyroidism, it is suppressed below normal.

The measurement of the total or FT_3 level is useful to document possible hyperthyroidism, especially if FT_4 levels are normal and the thyrotropin level is suppressed. Furthermore, the T_3 level should not be monitored in hypothyroidism because many medications and illnesses that do not involve the thyroid can block peripheral conversion of T_4 to T_3 and produce a low concentration of T_3. In addition, T_3 concentrations can be normal in hypothyroidism.

MEDICATIONS THAT INTERFERE WITH THYROID FUNCTION TESTING

Dopamine agonists and similar agents (table 1) can acutely suppress thyrotropin levels to lower-than-normal but detectable values.[3] In patients with true hyperthyroidism, thyrotropin levels are often undetectable. Amphetamines also transiently increase dopamine release for between 1 and 3 weeks. Although atypical antipsychotic agents (such as quetiapine fumarate) possess dopamine-blocking effects, no changes in thyrotropin levels have been reported. Patients who are taking these medications over long periods do not have sustained reductions in thyrotropin levels, and hyperthyroidism does not develop. Similarly, dopamine antagonists, such as metoclopramide hydrochloride, at doses of greater than 1 mg/kg each, can produce slight elevations in thyrotropin levels but not usually greater than 10 mIU/L.

DISPLACEMENT OF THYROID HORMONES FROM THYROID-BINDING GLOBULIN

Clinicians should be aware of medications (for example, nonsteroidal anti-inflammatory drugs[4]) that can displace

Table 1 *Medications that alter thyroid function test results in euthyroid people*

	Laboratory findings			
	Decreased TSH (below normal butdetectable	Increased TSH (usually <10 U/L)	Increased Free T_4	Decreased Free T_4
Medications	Dopamine, levodopa, bromocriptine, glucocorticoids (>0.5 mg/day dexamethasone, 100 mg/day hydrocortisone), octreotide, amphetamines	Metoclopramide >1 mg/kg amiodarone, iodinated contrast media	IV furosemide >80 mg/day, nonsteroidal agents (salicylates >2 g/day, salsalate >1.5-3 g/day, diclofenac, naproxen), IV heparin, amiodarone, iodinated contrast media	Phenytoin, carbamazepine

TSH = thyroid-stimulating hormone (thyrotropin); FT_4 = free thyroxine; IV = intravenous.

thyroid hormones from thyroid-binding globulin and transiently elevate FT_4 and FT_3 concentrations and depress thyrotropin levels (table 1). During continued medication administration, however, FT_4, FT_3, and thyrotropin levels return to normal.

The use of heparin increases lipoprotein lipase activity and produces a fivefold increase in FT_4 levels because T_4 is displaced by free fatty acids. Therefore, to avoid laboratory interference with the test results, FT_4 levels should be measured 1 hour or more after intravenous administration or 10 hours or more after administering low-molecular-weight heparin.[5]

A phenomenon that has confused clinicians for decades is that therapeutic levels of phenytoin and carbamazepine produce sustained reductions in T_4 and FT_3 levels despite normal thyrotropin levels in a clinically euthyroid patient. These paradoxic findings are caused by interference of these agents with the FT_4 assay, producing an underestimation of the FT_4 concentrations.[6] Therefore, clinicians should rely on the thyrotropin level rather than the FT_4 level when assessing thyroid status in patients receiving these agents.

INHIBITION OF CONVERSION OF T_4 TO T_3

Most T_3 is produced from the peripheral conversion of T_4 to T_3 by the enyzme 5-deiodinase. Amiodarone and iodinated contrast media (for example, ipodate, iopanoic acid, and tyropanoate) can inhibit the conversion of T_4 to T_3 both in the peripheral circulation and in the pituitary gland, and can produce confusing thyroid function abnormalities (table 1 and table 2). Within 1 week of ipodate administration, elevations in FT_4 levels, reductions in total T_3 levels, and a transient rise in thyrotropin levels occur; these return to normal within 2 weeks. Similar findings are observed during the first week of amiodarone administration. A transient elevation in thyrotropin levels (<10 mIU/L) occurs during the first 3 months of amiodarone treatment but during ongoing therapy, elevations in FT_4 and reductions in T_3 levels persist in patients who are euthyroid. Therefore, normal FT_4 and T_3 levels in a patient taking amiodarone are highly suggestive of overt thyroid dysfunction.

Beta blockers and corticosteroids that only inhibit the peripheral conversion of T_4 to T_3 interfere minimally with thyroid function test results. Propranolol hydrochloride (>160 mg/d), atenolol, and metoprolol tartrate produce small reductions in total T_3 levels. Large doses of corticosteroids (for example, >4 mg dexamethasone) produce reductions in total T_3 levels, which are useful in the management of thyroid storm or severe hyperthyroidism.

DRUG-INDUCED THYROID DISEASE

Drug-induced thyroid illness is associated with the use of iodides, iodide-containing preparations, lithium, and interferon alpha treatment.[7-10] Routine monitoring of thyroid function tests at baseline and every 3 to 6 months thereafter is recommended in susceptible people (for example, those with thyroid antibodies or euthyroid goiter) receiving these medications.

Iodides

Iodides are hidden in many preparations, including prescription (for example, amiodarone, radiocontrast dyes, povidone iodine, and iodinated glycerol) and nonprescription items (for example, cough and cold preparations, kelp tablets, herbal preparations, and dietary supplements).[5,6] Amiodarone contains 37.5% iodine by weight, exposing patients to an iodine load that is at least 100 times the normal daily intake of 0.5 mg. A dietary supplement, Cellasene (Rexall Sundown, Boca Raton, FL) recently

Table 2 *Effects of amiodarone on thyroid function*

Euthyroid	Hyperthyroidism	Hypothyroidism
↑FT_4 ↑TSH <10 mU/L (transient) ↓Total T_3	↑FT_4 ↑Total T_3 ↓TSH (undetectable levels Antithyroid antibody ±	↓FT_4 ↓Total T_3 ↑TSH >10 mU/L + Antithyroid antibody

FT_4 = free thyroxine; TSH = thyroid-stimulating hormone (thyrotropin); T_3 = triiodothyronine.

promoted to reduce cellulite, was found to contain 930 µg of iodine per recommended dose of three capsules. Thyroid dysfunction has been reported after the vaginal use of povidone iodine.[6] As much as 175 mg of iodide can be released from radiographic contrast media.

Iodide-induced hyperthyroidism (Jod-Basedow disease) usually develops within 3 to 8 weeks after an increase in iodide supplementation (for example, after the administration of radiocontrast dye or amiodarone) in persons with autonomously functioning, nontoxic multinodular goiters. Hyperthyroid symptoms can persist for several months, requiring therapy with thioamides and beta blockers. Radioactive iodine is not effective because the iodine loading prevents effective retention of the radioactive iodine. Iodide-induced hyperthyroidism has been attributed to malfunction of the Wolff-Chaikoff block.[5] This autoregulatory block normally protects the gland against excessive hormone production and the development of hyperthyroidism once a critical intrathyroidal iodide concentration is achieved.

Iodide-induced hypothyroidism is most common, but goiter and hyperthyroidism also occur. Risk factors for drug-induced hypothyroidism in people who are not taking thyroid supplements are listed in the box below. Women are at greater risk than men, as are those who show thyroid antibodies before starting therapy. Iodide-induced hypothyroidism develops if the gland is unable to "escape" from the Wolff-Chaikoff block after several days to resume normal hormone production. Thyroxine therapy should be administered for at least 6 months before attempts to stop are considered.

Amiodarone is being increasingly used for the management of a number of cardiac conditions, including atrial fibrillation and congestive heart failure. The overall prevalence of amiodarone-induced thyroid disease is estimated to be 2% to 24%.[11] Hypothyroidism is more common than hyperthyroidism. No clear relation exists between the development of thyroid dysfunction and either the cumulative dosage or the duration of amiodarone therapy, although most cases develop within the first 2 years of therapy. Rarely, because of amiodarone's long half-life (40-55 days) and sequestration in adipose tissue, thyroid dysfunction can occur the first year after it is stopped.

Some risk factors for drug-induced hypothyroidism in people not taking thyroid supplements

- Autoimmune thyroiditis (such as Hashimoto disease)
- Previous thyroid disease
- Partial thyroidectomy
- History of radioactive iodine administration
- History of postpartum thyroid disease
- Family history of thyroid disease
- Previous thyroid damage
- Female sex
- Preexisting or de novo development of antithyroid antibodies

Hypothyroidism is reported in 6% to 10% of patients receiving amiodarone and may be difficult to recognize because bradycardia and constipation are also common side effects of amiodarone use. Hypothyroidism should be confirmed by thyroid function tests (table 2). Levothyroxine replacement is often necessary even if amiodarone is stopped or the dosage reduced. After 1 year, thyroxine supplementation can be stopped to evaluate the need for continued therapy. Few guidelines are available for regulating thyroxine replacement. A return of the thyrotropin level to normal might not be possible without aggravating the underlying cardiac status. If amiodarone therapy is continued, thyroxine replacement should be maintained indefinitely.

Hyperthyroidism is reported in 1% to 5% of patients. The typical signs and symptoms are often not apparent, and clinical suggestions of hyperthyroidism should be confirmed by laboratory findings (table 2). Cardiac symptoms, weight loss, tremor, sleep disturbances, and myopathy could be attributed to amiodarone use, the existing cardiac disease, or hyperthyroidism. Two types of amiodarone-induced hyperthyroidism have been identified. Type 1 is a Graves disease-like hyperthyroidism, characterized by the presence of antithyroid antibodies. Type 2 is a subacute thyroiditis (no antithyroid antibodies) that is caused by a direct toxic effect on the gland, producing a "dumping" of thyroid hormone into the circulation.[7,12] Treatment is complicated, and referral to an endocrinologist is recommended. Treatment is necessary even after amiodarone is stopped because the hyperthyroidism can persist for several months due to amiodarone's long duration of action.

Lithium

Hypothyroidism and subclinical hypothyroidism have been reported in 5% to 20% and as high as 50% of people taking lithium carbonate.[3,9,10,13] A smooth, nontender goiter is observed in up to 60% of those receiving lithium for 5 months to 2 years; hypothyroidism may not be present.

As with iodides, lithium is concentrated in the gland and interferes with thyroid hormone synthesis and release, causing a compensatory increase in thyrotropin levels. A twofold increase in the incidence of thyroid antibodies has been found in patients treated with lithium (24%) compared with those not taking lithium (12%). The risk of lithium-induced antibodies increases with the duration of therapy (for example, >2 years) and is more common in women than in men. Antibody titers increased in two thirds of people with thyroid antibodies at baseline.[13,14]

Lithium-induced hypothyroidism is more frequent in those taking lithium for more than 2 years. Close moni-

toring of thyrotropin levels, rather than the immediate institution of thyroxine therapy, is reasonable in patients with subclinical hypothyroidism induced by lithium because abnormal thyrotropin levels can return to normal spontaneously. In a review of several prospective studies, a substantial fall in serum hormone levels and a rise in thyrotropin levels within 10 days to a few months of starting therapy were reported.[14] The thyroid abnormalities, however, returned to pretreatment levels within the first year, without additional therapy or interruptions or changes in lithium therapy. Thyrotropin levels were less likely to return to normal in people with preexisting antithyroid antibodies.

Levothyroxine supplementation can reverse the hypothyroidism, prevent further growth of an existing goiter, and permit the continued administration of lithium. Once lithium is stopped, the goiter and hypothyroidism do not always resolve. Management with thioamides should be considered, as should the surgical removal of the goiter.

Interferon alpha

Thyroid dysfunction is common after interferon alpha therapy for chemotherapy or long-term treatment of hepatitis C.[15-17] In contrast, thyroid dysfunction after the administration of interferon beta-1b for the treatment of multiple sclerosis is rare.[18]

The prevalence of thyroid abnormalities during interferon therapy ranges from 2.5% to 20%.[15,16] Symptoms of thyroid dysfunction may be absent or occur as early as 6 to 8 weeks after starting therapy or be delayed until after 6 to 23 months of receiving therapy. Hypothyroidism is more common (40%-50% of patients) than hyperthyroidism (10%-30% of patients). Fortunately, thyroid dysfunction seems to be transient in most patients, and treatment is not always necessary. Levothyroxine treatment is necessary only to alleviate hypothyroid symptoms; hypothyroidism often resolves spontaneously within 2 to 3 months after stopping therapy. Similarly, beta-blockade therapy is only needed for symptomatic hyperthyroidism because the hyperthyroidism is often transient. Thyroid dysfunction may take as long as 17 months after stopping therapy to resolve. Thyroid disease is rarely permanent.

MEDICATIONS THAT AFFECT T_4 REQUIREMENTS

Thyroid hormones are metabolized primarily by deiodination, but glucuronidation and sulfation are also important routes of elimination. Cytochrome P-450 hepatic enzyme inducers (for example, rifampin, rifabutin, phenytoin, carbamazepine, and phenobarbital) can increase the metabolic elimination of T_4 and T_3 by 20%, which is not clinically important in people who are euthyroid. Those requiring thyroxine replacement therapy, however, may need higher doses to maintain euthyroidism. Ritonavir, a potent P-450 mixed hepatic enzyme inhibitor and inducer, can increase thyroxine glucuronidation, necessitating a twofold increase in thyroxine dosage to maintain euthyroidism.[19]

Serotonin reuptake inhibitors may also alter T_4 requirements. In nine patients receiving thyroxine therapy, an elevation in thyrotropin levels and a reduction in FT_4 levels were noted after the addition of sertraline hydrochloride.[20] An increase in thyroxine clearance was thought to have occurred.

DRUGS THAT IMPAIR THE ABSORPTION OF EXOGENOUS THYROXINE

Patients should take levothyroxine on an empty stomach for optimal absorption. Several medications, including iron, aluminum-containing products (such as sucralfate, antacids, and didanosine), sodium polystyrene sulfonate, resin binders, and calcium carbonate have been reported to impair the absorption of exogenous thyroxine and decrease its efficacy.[21-24]

Not all calcium carbonate preparations have been implicated. Patients should take levothyroxine at least 4 hours before or after taking any medication that might interfere with absorption to minimize this interaction. To maintain euthyroidism, the levothyroxine dosage may need to be adjusted or the offending agent stopped.

CONCLUSIONS

The accurate interpretation of abnormal thyroid function test results may be complicated by the concomitant presence of medications and nonthyroidal illnesses. It is important that clinicians recognize the effects of drugs on laboratory interpretation, drug-induced thyroid illnesses, and exogenous thyroid requirements to prevent medical treatments that may be dangerous or that inappropriately increase the cost of caring for patients.

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Scientific Jargon

by Dyrk Schingman
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After several years of studying and hard work, I have finally learned scientific jargon. The following list of phrases and their definitions will help you to understand that mysterious language of science and medicine.

Scientific Phrase	Translation
"It has long been known"	I didn't look up the original reference.
"A definite trend is evident"	These data are practically meaningless.
"While it has not been possible to provide definite answers to the questions"	An unsuccessful experiment, but I still hope to get it published.
"Three of the samples were chosen for detailed study"	The other results didn't make any sense.
"Typical results are shown"	This is the prettiest graph.
"These results will be in a subsequent report"	I might get around to this sometime, if pushed/funded.
"The most reliable results are obtained by Jones"	He was my graduate student; his grade depended on this.
"In my experience"	Once.
"In case after case"	Twice.
"In a series of cases"	Thrice.
"It is believed that"	I think.
"It is generally believed that"	A couple of other guys think so too.
"Correct within an order of magnitude"	Wrong.
"According to statistical analysis"	Rumor has it.
"A statistically oriented projection of the significance of these findings"	A wild guess.
"A careful analysis of obtainable data"	Three pages of notes were obliterated when I knocked over a glass of beer.
"It is clear that much additional work will be required before a complete understanding of this phenomena occurs"	I don't understand it.
"After additional study by my colleagues"	They don't understand it either.
"Thanks are due to Joe Blotz for assistance with the experiment and to Andrea Schaeffer for valuable discussions"	Mr. Blotz did the work and Ms. Shaeffer explained to me what it meant.
"A highly significant area for exploratory study"	A totally useless topic selected by my committee.
"It is hoped that this study will stimulate further investigation in this field"	I quit.

TOPICS IN REVIEW

Use of opioids to treat chronic, noncancer pain

The American Medical Association's Council on Scientific Affairs previously addressed barriers to the appropriate management of pain in patients with acute and chronic cancer pain (Report 4, presented at the annual meeting of the AMA, 1995). Authoritative guidelines on these aspects of pain management now exist.[1,2] However, the use of controlled substances to treat chronic pain in patients who do not have cancer continues to be at the forefront of regulatory, disciplinary, and clinical practice disputes.

A number of critical issues underlie physicians' concerns over the use of opioids in patients with chronic, noncancer pain. These issues include safety and efficacy, the development of tolerance and physical dependence, the potential for drug misuse or addiction, and physicians' fear of regulatory scrutiny and legal sanctions. These issues and the neurobiology of acute and chronic pain are briefly reviewed in this report.

Some physicians continue to undertreat pain. Some of this is influenced by the lack of adequate education and training in pain diagnosis and treatment, which contributes to poor management by physicians of chronic pain. Thus, improvements in education must accompany any initiatives designed to eliminate other barriers.

METHODS

English-language reports of studies on people were selected from a MEDLINE search of the literature from 1966 to June 1999 using the MeSH headings "analgesics, opioid," "pain," and "chronic disease" but excluding "neoplasm." A total of 257 articles were retrieved. Additional articles were identified by reviewing the references cited in these publications. Further information was obtained from the websites of the American Pain Society (www.ampainsoc.org), the American Academy of Pain Medicine (www.painmed.org), the American Academy of Pain Management (www.aapainmanage.org), the American Society of Addiction Medicine (www.asam.org), the Pain and Policy Studies Group (www.medsch.wisc.edu/painpolicy), and from recently published textbooks.

NEUROBIOLOGY OF NORMAL AND CHRONIC PAIN

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage. The perception of pain is influenced by physiological, psychological, and social factors. Thus, the distinction between pain (as the primary sensory experience arising from a noxious stimulus) and suffering (the human reaction to the sensory experience) is important. The human reaction (suffering) takes on an added dimension in patients who have chronic, noncancer pain. Some of these patients not only have persistent pain but also have overriding affective components and learned responses that can lead to severe psychosocial disability and a pattern of repeated interaction with the healthcare system.

Summary points

- Peripheral tissue or nerve damage may lead to long-term changes that cause persistent pain in the absence of ongoing stimulation
- Opioids are effective in treating selected patients with chronic pain not related to cancer
- Patients most likely to benefit from opioids are those whose pain has an identifiable cause
- The risk of addiction is increased if a patient has a history of substance abuse but addiction seems to occur infrequently in other patients
- Physicians' fears of regulatory scrutiny play a part in the undertreatment of pain

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Nociceptive pain

Pain is normally evoked by only those stimuli that are sufficiently intense to activate primary afferent A fibers and C-fiber nociceptors. These free nerve endings are located in skin, viscera, muscle, fascia, blood vessels, and joint capsules. There are many varieties of nociceptors, the most important of which are nociceptive afferents and polymodal afferents. Polymodal afferents respond to heat and mechanical stimuli; some also respond to chemical stimuli.

Peripheral sensitization and primary hyperalgesia

Tissue damage and inflammation cause peripheral sensitization of nociceptors. Sensitized nociceptors have lowered response thresholds. Therefore, they can be activated by a light touch and thermal stimuli that are normally not painful, and during movement. They also exhibit an increased response to stimuli that are normally painful (known as primary hyperalgesia).

Central sensitization, secondary hyperalgesia, and allodynia

In contrast to A fibers, whose postsynaptic potentials are on the order of milliseconds, C-fiber potentials last up to

20 seconds.[3] Repetitive C-fiber input changes the excitability of spinal cord neurons. Stimulation at low frequencies causes a progressive prolongation in the response of certain dorsal horn neurons. Persistent stimulation causes central sensitization, which is characterized by an increased excitability of these neurons.[4] Clinically, it manifests as pain sensitivity beyond the sites of tissue damage or inflammation (secondary hyperalgesia) and the ability of stimuli from low threshold A receptors (which normally mediate light touch and hair movement) to generate sensations of pain or tenderness (mechanical allodynia).[5,6] Thus, in the presence of central sensitization, pain can be signaled by large diameter afferents as well as by small diameter afferents. This process is believed to play a major role in neuropathic pain.

Neuropathic pain

Neuropathic pain results from abnormal operation of the nervous system after injury, usually injury to neural tissue. These types of pathophysiological pain are often chronic and differ qualitatively from acute nociceptive pain. Both peripheral and central changes contribute.

The pain system

The pain system is subject to ongoing modulation and modulation by injuries. The view that chronic pain is merely an extension of acute nociceptive pain is not valid, particularly in cases of neuropathic pain. With central sensitization, pain can also be signaled by low threshold mechanoreceptors. Ectopic discharges from injured neuronal elements, phenotypic switches, and gene expression also participate in sensory signaling and modulation of central excitability that may ultimately cause persistent pain in the absence of an ongoing stimulus.

MORAL OBLIGATION TO RELIEVE PAIN

The relief of suffering is universally acknowledged as a cardinal goal of the ethical and compassionate practice of medicine. Pain is a complex phenomenon for both the patient and caregiver, influenced by physiological and psychosocial factors. The challenges of clinical management are heightened by pain since it influences the interpersonal relationship between the patient and the physician. The obligation of physicians to relieve pain is a conditional obligation, in which the ethical principle of beneficence guides a physician's duty to relieve pain (unless a patient of sound mind rejects such treatment). The proffering of treatment and, in some instances the withdrawal of treatment, may relieve suffering and thereby promote good.

The physician also has an ethical obligation to promote the dignity and autonomy of all patients. Physicians must respect the decisions made by competent patients. It is ethically acceptable to administer drugs in whatever dose is necessary to relieve a patient's suffering, even if doing so may cause foreseeable side effects, as long as patients or their proxies are made aware of this possibility. However, physicians should not accede to demands for treatment that are inconsistent with sound medical practice. These concepts apply to the treatment of all types of pain.

TREATMENT OF PATIENTS WITH CHRONIC, NONCANCER PAIN

Nonopioid drugs are the most commonly used and are often effective treatment for chronic, noncancer pain. Some effective and commonly used nonopioid drugs include acetaminophen, nonsteroidal anti-inflammatory drugs, and adjunctive agents such as antidepressants and antiepileptic drugs. For headache, specific drugs such as selective serotonin agonists and ergot derivatives are appropriate.

In treating mild to moderate pain, increasing the dose of acetaminophen and aspirin or nonsteroidal anti-inflammatory drugs beyond a certain point does not provide increased analgesia. Significant side effects are associated with the use of these drugs, especially when large doses are used over prolonged periods. Acetaminophen can cause hepatic injury or failure, and nonsteroidal anti-inflammatory drugs increase the risk of gastrointestinal bleeding and ulceration and can cause renal damage. Their use is associated with several thousand hospitalizations annually, with elderly people being at disproportionate risk.

The effects of opioid analgesics are mediated by stereospecific receptors (μ, κ, and δ).[7] Opioid-induced analgesia acts at several sites within the central nervous system and perhaps the periphery as well. Oral, parenteral, transdermal, transmucosal, intrathecal, and epidural administration of opioids can produce analgesia.

Some patients with chronic, noncancer pain respond to nondrug treatment modalities ranging from ice massage to transcutaneous electrical nerve stimulation. Patients, particularly those with substantial disability, which affects their capacity to meet personal, social, or occupational demands, and psychosocial problems, who have not benefited from conventional treatment for pain, are often referred to multidisciplinary pain clinics. These clinics aim to eliminate maladaptive pain behaviors, enable the patient to achieve control of their pain, improve coping through the use of the treatments described above, and to improve psychological functioning, reduce disability, and achieve rehabilitation.

In cases in which less invasive modalities have failed, implantable drug delivery systems (such as intraspinal infusion treatments) are used. In selected patients with severe or unrelenting pain, stimulation of specific central nervous system structures and various neuroablative procedures (such as dorsal rhizotomy, neurolytic nerve block, or intracranial lesioning) have also been used.

SAFETY AND EFFICACY OF OPIOID THERAPY FOR CHRONIC, NONCANCER PAIN

Surveys of patients and physicians

The main concern about the use of opioids in chronic, noncancer pain is their safety and efficacy. In a questionnaire completed by patients attending pain centers, 83% of those who were taking opioids reported that the treatment had been at least moderately beneficial. A majority of patients reported no significant adverse effects, and about one-third reported stable dosage requirements and a lack of concern about the possibility of addiction or dependence.

A survey of physicians who were members of the American Pain Society found that many pain specialists believe that long-term opioid treatment is beneficial in selected patients with chronic, noncancer pain; that this treatment is underutilized; and that addiction, tolerance, and physical dependence are generally not significant problems. A national survey also found that a majority of physicians would prescribe long-term opioid treatment for a selected subset of patients with chronic, noncancer pain. Physicians' specialties and geographical location influence their willingness to prescribe opioids, their concern about side effects, and their belief that symptomatic relief alone is sufficient cause to continue the use of opioids.

Clinical surveys and case series

Several clinical surveys, uncontrolled retrospective studies, and case series on opioid use in patients with this type of pain have been published. Reports encompassing more than 1000 patients have described favorable outcomes in selected samples of patients.[8-14] Three reports account for about 70% of these patients (table 1).[9,12,13]

Smaller retrospective surveys have involved diverse patient populations with different diagnoses who were treated with various opioid drugs. Most of these studies are limited by having nonrandomized designs, small patient numbers, and insufficient follow up. The evaluation of outcome often relied on self-reported pain reduction, and different outcomes were selected to indicate success. The results of psychological assessments were generally not reported. Only a few of the studies evaluated changes in functional status, which most pain specialists would agree is important in evaluating the efficacy of treatment in these patients. Documented gains in function were uncommon,[11] although patients who had either not benefited from pain clinic programs or who had enrolled in an inpatient treatment program experienced improved function.[10] In a recent study, 12 of 19 patients for whom other treatments had failed responded to dosage titration and fixed interval administration of opioids.[14] Most of these patients had mixed nociceptive and neuropathic sources of pain, and cognition improved in association with analgesic response.

At least 40% to 50% of patients with chronic, noncancer pain evaluated in multidisciplinary treatment programs were already taking opioids.[15] The prescription of opioids for such patients is influenced by the patient's pain

Table 1 *Summary of large clinical surveys of opioid treatment in patients with chronic pain not caused by cancer*

Study	Number of participants	Diagnosis	Opioid used	Equivalent daily dose	Duration of trial	Analgesic efficacy	Adverse effects	Comments
Taub[9]	313	Mixed	Mixed	10-20 mg methadone	Up to 6 years	Standard not described; all patients said to benefit	Limited toxicity; drug abuse occurred in 4%	Selection criteria not specified; no mention of alternative treatments provided or tried; changes in functional status not reported; 8 of 13 participants who abused drug had history of drug abuse
Zenz[12]	100	Mixed neuropathic pain (53%); back pain (24%); osteoarthritis (11%)	Morphine; buprenorphine; dihydrocodeine	Variable dose of morphine (range 20-200 mg); dose titrated; administration on fixed schedule	Up to 4 years (mean 7 months)	Pain reduced >50% in 51%; partial pain reduction in 28%	Constipation (20%); edema (12%); drug abuse (9%)	Other treatments had failed participants; adjunctive treatment not provided; no psychological assessment; performance status improved or declined in conjunction with analgesia or lack of response; patients with neuropathic pain also improved
Ytterberg[13]	290	Rheumatic pain*	Codeine; oxycodone	About 81 mg codeine	>3 years (35%)	Opioids reduced rheumatic pain in >50%	38% reported side effects including nausea, dyspepsia, constipation; sedation was most common side effect; 1% of participants abused drug	Retrospective search of pharmacy database with follow-up interview; increases in dose signalled progression of disease

*Population was selected from patients at a rheumatology clinic.

behavior (nonverbal communication of pain, distress, and suffering).[16] These programs, and most pain treatment specialists, now endorse an approach that utilizes opioids as an adjunct to a comprehensive treatment strategy using behavioral interventions in combination with other modalities to improve a patient's coping and functional status.[17,18]

Patients referred to specialized pain clinics are usually more challenging clinically than other patients with chronic pain. Patients at pain clinics tend to have higher levels of psychological distress, greater functional impairment, more work-related injuries, lower levels of education, more frequent surgery for pain, and more frequent reports of constant pain.[19-22] Thus, this population is not representative of the general population of patients with chronic pain.

Prospective, randomized trials

Several randomized trials have evaluated "opioid responsiveness" in patients with chronic, noncancer pain, particularly neuropathic pain.[23-27] Clinical experience suggests that opioids are most effective in treating nociceptive pain and less effective in neuropathic pain. In studies using single doses of morphine (5 mg to 20 mg given intravenously), opioids were ineffective in neuropathic or idiopathic pain,[24,28] although comparatively larger doses of alfentanil relieved mechanical allodynia in patients with neuropathic pain.[26] Some reports suggest that pain relief in such patients reflects opioid influences on the affective dimension of pain.[28,29] However, other studies in which doses were titrated upward (equivalent to 20 mg to 70 mg morphine) found clear dose-response, analgesic effects in patients with neuropathic pain.[23,25,27]

Five randomized, controlled trials have investigated the long-term efficacy of opioids in patients with chronic, noncancer pain (table 2).[30-34] Most involved patients with musculoskeletal pain. Results suggest that titration of dose to either adequate analgesia or intolerable side effects is more effective than the use of fixed doses; effects of opioid treatment on disability, emotional distress, quality of life, and psychological or functional improvement are quite variable; and a subgroup of patients with neuropathic pain does benefit from long-term use of opioids but they are either ineffective or intolerable in many patients with neuropathic pain.

Patients with well-defined nociceptive pain are the most responsive to opioids. Patients with neuropathic and central pain are less responsive but a small subgroup is responsive. Those patients whose pain syndrome is psychologically maintained are generally not responsive to opioids and are not appropriate candidates for opioid treatment.

Factors that may be useful in determining if a patient is suitable for ongoing opioid treatment include:

- Relevant findings on medical and psychosocial history
- Patient's response to other therapeutic strategies
- The type, intensity, and description of pain
- Patient's functional capacity, employment history, and level of social support
- Presence of psychopathology and level of emotional distress
- Level of coping and the perception of pain and beliefs
- Ability to comply with treatment plan
- Adverse effects of treatment with opioids
- Previous pattern of health care utilization[59]

ADVERSE EFFECTS OF OPIOID TREATMENT

Long-term treatment with opioids has not been associated with organ toxicity in cancer patients or patients on methadone maintenance.[1] Most side effects are usually predictable extensions of opioid pharmacology and include respiratory depression, drowsiness, dizziness, nausea, constipation, diaphoresis, decreased sexual function, changes in mood, and pruritus. The occurrence of these side effects may limit the dose that can initially be administered to many patients, interfering with the achievement of adequate pain relief. However, tolerance to most side effects, except constipation, usually occurs, allowing upward titration of the dose until a favorable balance is achieved between analgesia and side effects.

A review of a laboratory and field studies and a large number of studies on the effects of opioids on psychomotor and cognitive functioning in a variety of patients concluded that long-term use of opioids normally should not limit driving or other daily activities.[35] This does not extend to patients who are initiating titration or who are consuming other psychoactive agents, and it would also be obviated if overt impairment is observable. Clinicians must be vigilant in assessing patients for cognitive or psychomotor impairment, resorting to formal neuropsychological testing if warranted.[36]

TOLERANCE AND PHYSICAL DEPENDENCE

Analgesic tolerance is not a significant clinical problem for most patients during the treatment of cancer pain.[2] Most patients with chronic, noncancer pain who are treated with opioids find an effective dose that remains stable for long periods. As with patients with cancer, dose escalation usually reflects progression of a painful lesion rather than drug-seeking, tolerance, or addiction.[10,12]

Physical dependence is defined as the emergence of an abstinence syndrome, which occurs in individuals who

Table 2 *Summary of randomized trials of opioids used to treat chronic pain not caused by cancer*

Study (design)	Number of participants (mean age)	Diagnosis	Outcome measures	Drug treatment	Equivalent daily dose*	Duration of trial	Efficacy	Adverse effects	Comments
Arkinstall[34] (double-blind, placebo-controlled, parallel group)	30 (55.4 years)	Majority had rheumatic pain (43%) or back pain (30%)	Pain intensity (VAS); pain disability index; use of drugs for rescue treatment	Codeine CR	273 mg (200-400 mg)	1 week with open label extension for up to 19 weeks	CR codeine reduced	Nausea, headache; constipation; dizziness; somnolence; vomiting; pruritus	Participants on stable dose of acetaminophen + codeine; reduced pain and pain-related disability
Jamison[33] (open)	36 (mean age not available)	Chronic back pain	Pain; mood; activity level; sleep	Naproxen; fixed-dose oxycodone; oxycodone and morphine (CS titrated)	Not available	16 weeks	Participants in both opioid groups did better than naproxen group; titrated group had less pain and emotional distress; little effect on activity and sleep	None detected; 1 participant showed signs of abusing drug	Little difference between pre-treatment and post-treatment measures after withdrawal from opiate
Kjaersgaard-Andersen[31] (double-blind, parallel group)	158 (66 years)	Osteoarthritis of the hip	Pain (verbal rating); adverse reactions	60 mg codeine + 1 g acetaminophen three times daily; 1 g acetaminophen three times daily; 400 mg ibuprofen for rescue	180 mg (fixed dose)	4 weeks	Codeine significantly reduced pain during first week	Nausea; vomiting; dizziness; constipation in codeine group	Enrollment stopped because of large number of withdrawals caused by adverse reactions
Moulin[32] (double-blind crossover)	46 (40 years)	Chronic regional pain of soft tissue or musculoskeletal origin with lack of response to codeine, NSAIDs, and tricyclic antidepressants	Pain intensity, psychological features, quality of life, cognition	60 mg morphine SR twice daily; 1 mg benztropine twice daily	83.5 mg; 1.7 mg	9 weeks	Some analgesic benefit from morphine, no psychological or functional improvement		Patients also enrolled in multidisciplinary pain treatment program
Dellemijn[30] (double-blind, placebo-controlled crossover)	53 (47 years)	Continuous unilateral neuropathic pain	Pain intensity and unpleasantness; quality of life	Fentanyl + diazepam; fentanyl + saline; transdermal fentanyl	0.87 mg + 52 mg; 0.87 mg; 44 µg/hour	IV test for response followed by open label extension with transdermal formulation for 12 weeks	IV fentanyl relieved pain without sedation; transdermal application provided long-term relief in 35%; quality of life improved	Nausea; sweating; headache; fatigue; vomiting; dizziness; constipation; pruritus; dry mouth, which tended to resolve over time	Large number withdrew because of side effects or lack of efficacy but minority of participants with neuropathic, noncancer pain obtained substantial and sustained relief

VAS = visual analog scale; NSAIDs = nonsteroidal anti-inflammatory drugs; IV = intravenous.
*Range of dose given when known.

have been chronically exposed to a particular drug. The abstinence syndrome is triggered by a reduction in or cessation of a dose or by the administration of a drug with antagonist properties. The administration of pure antagonists, mixed agonist-antagonists, or partial agonists can precipitate an abstinence syndrome in someone who is physically dependent on opioids. The physiological changes that underlie physical dependence will not cause problems as long as abrupt abstinence is avoided, and the presence of physical dependence has not precluded the uncomplicated discontinuation of opioids during the management of noncancer pain.

Patients who are physically dependent may experience subtle withdrawal symptoms between doses that manifest as increased pain.[20] When these patients increase their opioid dose or frequency of use, they may actually be treating opioid withdrawal.[37] Such phenomena may contribute to a pattern of drug use in which pain becomes

sustained or maladaptive behaviors manifest themselves.[38] This can be minimized with the use of long-acting, controlled-release opioid preparations.

ADDICTION OR ABUSE

The development of addiction results from an interaction between the inherent reinforcing properties of opioid drugs, such as euphoria or diminished perception of negative feelings or punishment, and predisposing psychological, social, and physiological factors that are uncommon in the heterogeneous population of patients with chronic pain. Tolerance or physical dependence should not be considered diagnostic of addiction in such clinical populations because these are expected consequences of opioid use.[38]

The prevalence of addiction among patients with chronic, noncancer pain is unknown. There are no systematic longitudinal surveys of heterogeneous populations with this type of pain. The exposure of patients to an opioid does not necessarily elicit behavior consistent with addiction.[39] The rates of drug abuse and addiction in patients with chronic, noncancer pain have been estimated at between 3.2% and 18.9%.[37,41] Higher rates of aberrant drug use have been reported in multidisciplinary pain management programs.[19,42]

Alcoholism or other drug addiction is a contraindication to the use of opioids in patients with chronic noncancer pain. Treatment of pain in such patients or in those with a history of drug abuse or addiction should include consultation with or referral to an expert who can provide skilled assessment and monitoring.[38] Nonetheless, clinicians must always consider the potential for addiction during the treatment of any patient. The experience of pain management programs further encourages caution in the treatment of patients with idiopathic pain, high levels of psychological distress or disability, previous overuse of medical resources, or overuse of prescription or nonprescription drugs.

PSEUDOADDICTION

Some healthcare providers misinterpret the seeking of pain relief in patients with pain as aberrant behavior (that is, patients seeking drugs for nontherapeutic purposes). This iatrogenic syndrome, known as "pseudoaddiction," manifests as a direct consequence of inadequate pain relief.[43] Patients' demands for analgesics increase and they become intensely focused on finding relief when pain is unrelieved. These behavioral changes are driven by the severity of the pain, and the misinterpretation of these behaviors may lead to a breakdown in trust between the patient and physician. The provision of adequate pain relief leads to a resolution of this behavior.

Recommendations adopted by the AMA on using opioids to treat chronic pain not related to cancer

Further controlled trials should be conducted on the use of opioids in patients with chronic, noncancer pain in an effort to:

Identify best practice with regard to the selection of regimens for drug treatment and other modalities

Identify the characteristics of patients that predict opioid responsiveness

Provide support for the development of guidelines on appropriate precautions, contraindications, and the degree of monitoring required in such patients

Further recommendations:

The AMA encourages states to create multidisciplinary task forces or pain commissions to study the barriers to pain management in their state and to make and implement recommendations for policy that will create a practice environment conducive to effective pain management. Guidelines introduced by medical boards are preferable to regulation or statutes.

The AMA and relevant specialty societies should promote educational offerings for physicians to facilitate learning about the principles of the diagnosis and treatment of pain.

The AMA will encourage that appropriate education in pain evaluation and management be provided as an integral part of the core curriculum at all medical schools.

These statements were recommended by the Council on Scientific Affairs at the AMA's annual meeting in 1999

PRESCRIPTION POLICIES AND PHYSICIANS' FEARS OF LEGAL SANCTION

Prescribing by physicians is subject to state laws and regulations, which sometimes are more restrictive than the federal Controlled Substances Act. Prescribing is reviewed by a number of agencies (state justice departments, state medical boards, local law enforcement agencies, and triplicate prescription monitoring programs). State governments have begun to adopt laws that provide immunity from disciplinary action and criminal prosecution for physicians who treat patients with opioids for chronic or "intractable" pain. This is fraught with risks, however, because intractable pain treatment acts have a number of significant limitations such as defining the medical use of opioids as a therapy of last resort; implying that their use be restricted only to those cases in which the cause of the pain cannot be removed; requiring an evaluation of every patient with pain by a specialist in the organ system believed to be the cause of pain; or excluding patients with a history of substance abuse.

The guidelines developed by medical boards also vary considerably in the conditions and qualifications they describe for the use of opioids to treat patients with chronic,

noncancer pain.[44,45] In the past decade, states have adopted or changed laws, regulations, or medical board guidelines to create a practice environment that is conducive to assuring access to appropriate pain relief. To promote consistency in state medical policy, the Federation of State Medical Boards recently adopted model guidelines.[46] A compilation of the current guidelines is available from the University of Wisconsin's Pain and Policy Studies Group (see methods).

Regulatory policies can perpetuate the undertreatment of pain either by impeding access to controlled substances or by influencing prescribing behavior. The institution of multiple-copy prescriptions caused a large decline in prescribing, some of which is best explained by a change in the behavior of legitimate prescribers.[47,48]

Some concerns about inappropriate scrutiny seem to be legitimate; results of a nationwide survey of members of boards of medical examiners found that many would potentially recommend investigation of a prescriber based solely on the knowledge that an opioid had been administered for longer than 6 months to a patient with noncancer pain.[49]

GUIDELINES ON THE USE OF OPIOIDS

Several sets of guidelines or consensus statements have been promoted recently to try to create a practice environment that is conducive to effectively managing pain while protecting the public from the illegal diversion of controlled substances.[50-58] In a joint consensus statement issued in 1997, the American Academy of Pain Medicine and the American Pain Society noted that opioids are an essential part of pain management and the societal costs of chronic, noncancer pain are substantial. They also acknowledged that chronic pain is often managed inadequately and that accepted principles of practice should be developed. Additionally, the statement said that state legislatures and regulators must recognize the importance of opioids in treating pain and that principles of good medical practice should guide the prescribing of opioids.[58]

Most guidelines on prescribing opioids also acknowledge that good medical practice should guide prescribing (box). Treatments must be individually tailored to patients with chronic pain, and consideration should be given to different treatment modalities. Most guidelines emphasize how best to prescribe long-term opioid treatment and the importance of monitoring to evaluate effectiveness and the patient's functioning. Minimal guidance is provided on which patients should receive opioids or what criteria should be used to select them. Several guidelines suggest that opioid treatment should be contemplated only after adequate trials of other reasonable alternatives. No empirical studies have been conducted to substantiate these guidelines.

CONCLUSIONS

A subgroup of patients with chronic, noncancer pain can benefit from long-term opioid treatment. Although selection criteria have not been adequately validated, these patients usually have one or more identifiable causes for their pain. Generally, they have not responded adequately to other analgesics or techniques of pain management or they may receive additional benefit from the adjunctive use of opioids. These patients experience a reduction in pain and have either functional improvement or are functionally stable on opioids. Patients in this category exhibit a reduc-

Common elements of guidelines on using opioids to treat chronic pain[50-58]

Evaluation of the patient

Obtain a pain history and assess the impact of pain on social, occupational, physical, and psychological function

Review previous diagnostic studies, other consultations and opinions, and previous surgical and medical interventions

Review medical, psychiatric, and substance abuse history and assess coexisting diseases or conditions

Conduct a directed physical examination

Treatment plan and objectives

Establish a working diagnosis and medical indication for treatment with opioids

Outline measurable outcome objectives (for example, pain control, improvement in activities of daily living, functional improvement)

Provide informed consent on the risks and benefits associated with opioids

Discuss the conditions under which opioids will be prescribed and discontinued

Periodic review

Assess the safety and efficacy of treatment (for example, subjective pain ratings, functional changes, quality of life, side effects of opioids)

Assess for compliance and evidence of misuse

Reassess the nature of the pain complaint to confirm that opioid treatment is still warranted

Consultation

Referral to a specialist in pain medicine may be warranted depending on the expertise of the practitioner and the complexity of the problem

Referral to an addiction specialist is often indicated for patients with a history of addiction or substance use disorder

Referral to a psychiatrist or psychologist may be indicated in cases of significant psychiatric comorbidity

Documentation

Specific documentation on the following areas should be maintained:

- Evaluation
- Diagnoses (including the reason for prescribing opioids if not obvious from the diagnoses)
- All prescriptions written
- Overall plan to manage pain
- Consultations received
- Written instructions to the patient, the patient's consent, and agreements with the patient

tion in functioning or an increase in suffering when opioids are tapered off or discontinued.

The guidelines that exist to encourage the appropriate use of opioids in patients with chronic, noncancer pain are not treatment algorithms but rather general principles of good medical care. Restrictive regulatory policies on the use of opioids and physicians' fears of regulatory scrutiny continue to play a part in the undertreatment of pain. Until additional controlled scientific data are available, physicians' decisions about opioid use will be based on an evolving clinical consensus influenced by "idiosyncratic, philosophical beliefs created by prior education, populations treated, traditions, myths, and cultural norms interacting with regulatory pressures."[60]

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Update on Alzheimer's disease: recent findings and treatments

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The United Nations estimates that the number of people with dementia in developed countries will increase from 13.5 million to 36.7 million between 2000 and 2050.[1] Currently, about 4 million individuals with dementia live in the United States. Alzheimer's disease is the most common form of dementia, accounting for 50% to 70% of all cases and more than 100,000 deaths annually.[2]

The disease was first described by Alois Alzheimer in 1907; it is a progressive dementia characterized neuropathologically by widespread neuronal loss, β amyloid deposits in cerebral blood vessels, the development of neuritic plaques and the presence of neurofibrillary tangles. These deficits particularly affect the association areas of the cerebral cortex, the hippocampus, and the middle and temporal lobes. Decreased concentrations of the neurotransmitter acetylcholine are also a hallmark of Alzheimer's disease and are strongly associated with the severity of the dementia.

These neuropathologic changes result in the primary symptom of the disease: a decline in memory and cognition that leads to marked impairment in daily functioning. Changes in personality may be present as an early symptom of the illness, and behavioral disturbances including agitation, hallucinations, and delusions often occur as the disease progresses. The duration of the illness is approximately 7 to 10 years from the time of diagnosis; in the later stages of the disease, patients require total care. The overall economic and emotional burden of this illness is significant; the annual cost of caring for patients with Alzheimer's disease in the United States is estimated to be $119 billion.[3]

Although there has been important progress in describing and understanding Alzheimer's disease, there is no cure, and researchers are still trying to understand its etiology and pathophysiology. Currently, research is focused both on increasing our understanding of the pathophysiology of the illness to develop appropriate treatments and on identifying the risk factors for Alzheimer's disease to intervene in the preclinical stages of the illness. In this article we summarize the diagnostic criteria for Alzheimer's disease, describe the risk factors and current pharmacologic approaches, and discuss treating patients with the disease.

Summary points

- About 50% to 70% of all cases of dementia are Alzheimer's disease
- Risk factors for Alzheimer's disease include being older than 60 years, having a family history of dementia, being female, and having lower levels of educational attainment
- The apolipoprotein Eε4 allele has been identified as a genetic risk factor for Alzheimer's disease
- The drugs tacrine and donepezil have been approved by the US Food and Drug Administration for use in treating Alzheimer's disease
- In the United States, about 40% of patients with Alzheimer's disease take donepezil, the most commonly prescribed drug for this condition
- Taking estrogen replacement therapy, anti-inflammatory drugs, and antioxidants may lower the risk and delay the onset of Alzheimer's disease

Many patients with Alzheimer's disease need total care

METHODS

This overview is based on findings from recent epidemiologic and experimental studies as well as randomized clinical trials. In addition to the data and literature available through Stanford's Aging Clinical Research Center, we conducted MEDLINE and PsychLit searches using the terms "Alzheimer's disease" and "dementia", and searched the *Cochrane Library* database. This review also draws on additional literature reviews and the opinions of leaders in subspecialties of research into Alzheimer's disease.

DIAGNOSTIC CRITERIA

The standard clinical criteria for the diagnosis of Alzheimer's disease were developed by the National Institute of Neurological and Communicative Disorders and Stroke and the Alzheimer's Disease and Related Disorders Association.[4] Alzheimer's disease is classified as into one of three diagnostic categories: definite Alzheimer's disease, probable Alzheimer's disease, and possible Alzheimer's disease. The diagnosis of definite Alzheimer's disease requires histopathologic confirmation of clinical features by postmortem examination. Diagnoses made from the findings of the postmortem examination correspond to antemortem diagnoses about 90% of the time.[5]

In general, the criteria for the clinical diagnosis of probable Alzheimer's disease include onset between the ages of 40 and 90; no disturbance of consciousness; dementia established by clinical examination and a standardized assessment of mental status, which is supplemented by neuropsychologic tests; deficits in two or more areas of cognition (one of which is memory) that are characterized by gradual onset and progression; absence of systemic disorders or other brain diseases that could account for the progressive deficits in memory and cognition; and the deficits do not occur exclusively during an episode of delirium.

The clinical diagnosis of possible Alzheimer's disease is made using the same criteria as probable Alzheimer's disease except that only a single, progressive, severe cognitive deficit is identified and other identifiable causes are absent. Because this deficit is often memory loss alone there is sometimes an overlap between this syndrome and what is referred to as "mild cognitive impairment." However, mild cognitive impairment typically involves milder memory loss than would be observed in dementia and also requires the absence of functional impairment.[6]

RISK FACTORS

Many investigators emphasize that intervening during both the preclinical and the early stage of Alzheimer's disease may prolong the functioning of patients and extend the length of time before they are placed in institutional care. Identifying candidates in the preclinical stages of the illness requires knowledge of the risk factors for Alzheimer's disease, and a large amount of research aims to identify these factors.

Age

Both the prevalence and incidence of Alzheimer's disease increase with advancing age, seeming to double about every 5 years after the age of 60.[2, 7] The strong association between age and Alzheimer's disease has led investigators to suggest that biologic processes associated with aging may play a part in the development of the disease but that genetic, psychosocial, and environmental risk factors alter the age-specific rates of the illness.[8]

Genetic vulnerability

In the past 10 years there has been an important increase in our understanding of the genetic etiology of Alzheimer's disease. Point mutations in genes on chromosomes 1, 14, and 21 are expressed as autosomal traits linked to the development of early-onset Alzheimer's disease in specific families; however, patients with these mutations account for less than 5% of all patients with Alzheimer's disease.[5]

Several susceptibility genes for Alzheimer's disease have been identified. In particular, the apolipoprotein E ε4 allele is a genetic risk factor for the development of Alzheimer's disease.[9] Apolipoprotein E is a protein that is thought to be active in the transport of plasma cholesterol and the repair of neurons. Apolipoprotein E is encoded by a gene on chromosome 19, and there are three allelic variants (ε2, ε3, ε4), yielding six possible genotypes. The presence of the ε4 allele is associated with a dose-dependent increased risk of Alzheimer's disease. Individuals with one ε4 allele have twice the risk of developing the disease as people without the allele, and individuals who are homozygous for the allele are 10 times more likely to develop the disease.[10] However, studies have not found a strong association between the allele and progression of

the disease, although there may be an association between the presence of the *ε4* allele and the behavioral symptoms of Alzheimer's disease.[11]

Although it has been suggested that apolipoprotein E affects the deposition of amyloid, the development of neurofibrillary tangles, and cholinergic function, the exact pathophysiologic link between the ε4 allele and Alzheimer's disease remains unclear. Individuals without any of these susceptibility genes may develop the disease, but those who have genetic risk factors may never develop it.[7,12] The current recommendations of the National Institute of Aging and the Alzheimer's Disease and Related Disorders Association are that genotyping for the allele should not be used to predict the risk of developing Alzheimer's disease in people without symptoms and should not be used as the sole diagnostic test for the disease.[13]

Family history of dementia

Having a family history of dementia is a risk factor for Alzheimer's disease; this risk extends beyond those family members who have genetic markers for susceptibility. The risk seems to increase between two- and four-fold among people who have a first-degree relative with the disease.[5]

Other possible risk factors

Prevalence studies have identified higher rates of Alzheimer's disease in women.[5] However, these studies have often included only a small number of men with the disease, thus rendering the estimate of prevalence unstable. Higher levels of educational attainment are associated with a delay in the onset of the disease and lower levels with an increased risk.[7] Investigators have suggested that education may increase synaptic density and thus minimize or delay the effects of neuronal loss associated with the disease.[14] However, having less education may be a proxy for other factors such as poor nutrition and test bias. The observation of an association between arteriosclerosis, the ε4 allele, and risk of Alzheimer's disease has led to consideration of vascular risk factors in the etiology of the illness.[15] Other suggested risk factors include traumatic head injury, depression, low levels of occupational attainment, and engaging in fewer social activities.[16, 17] Interactions among these individual risk factors can significantly affect the degree of risk. For example, the age of onset of Alzheimer's disease in women who have both the ε4 allele and a family history of dementia has been found to be significantly lower than that in women who have only one of these risk factors. Although the identification of risk factors can suggest that someone is at risk of developing Alzheimer's disease, some individuals who have a variety of risk factors may never develop the illness.[18]

CURRENT PHARMACOLOGIC APPROACHES

Pharmacologic treatments for Alzheimer's disease are generally recommended only for those patients who already have been diagnosed with mild to moderate disease. However, several studies are investigating pharmacologic treatments in people who do not yet have the disease but are at risk of developing it. For example, the National Institute of Aging is currently funding an investigation into the effectiveness of donepezil in individuals with mild cognitive impairment.

Neurobiologic features, such as the accumulation of amyloid and the reduction in acetylcholine, and possible impairments in immune and inflammatory mechanisms have informed the development of current pharmacologic approaches. Clinicians must rule out any other potentially treatable causes of the symptoms of dementia such as thyroid disease, alcoholism, or drug toxicity before their patients begin drug treatment.[16]

Acetylcholinesterase inhibitors

The best developed approach to treatment aims at correcting the deficit of acetylcholine which is associated with Alzheimer's disease. Acetylcholinesterase inhibitors include first-generation compounds such as physostigmine and tacrine and second-generation compounds such as donepezil and metrifonate and rivastigmine. These compounds increase the concentration of acetylcholine and the duration of its action in synapses by inhibiting the acetylcholinesterase enzyme (which metabolizes acetylcholine). Acetylcholinesterase inhibitors are currently the most successful drugs used to enhance the transmission of acetylcholine, and they may be more beneficial than direct activation of cholinergic receptors.

In 1993, tacrine became the first cholinesterase inhibitor to receive approval from the Food and Drug Administration for use in patients with Alzheimer's disease; treatment with tacrine, however, resulted in only modest improvements in cognition.[19] Tacrine has a lower bioavailability than second-generation cholinesterase inhibitors such as rivastigmine and donepezil, and it has a worse side-effect profile which includes hepatotoxicity.[20,21]

Donepezil is a highly selective, noncompetitive, reversible, second-generation acetylcholinesterase inhibitor that received approval from the Food and Drug Administration in 1996.[22] In phase 2 and phase 3 clinical trials, treatment with donepezil significantly improved cognition, scores on the global assessment of change, and reduced the severity of the disease when compared with placebo.[23-25] Donepezil has a better side-effect profile, is not hepatotoxic, and more patients are able to tolerate donepezil at therapeutic doses than can tolerate tacrine.[19] Other second-generation cholinesterase inhibitors are either already on the market (for example, rivastigmine in the United States and Europe) or have been submitted for approval in the United States (metrifonate). Initial trials have found that the magnitude of improvement in patients treated with rivastigmine matches or exceeds that of

other compounds.[26] However, rivastigmine seems to require a longer period of titration than donepezil before a therapeutic dose is reached.[27]

Estrogen

Epidemiologic studies have suggested that in women estrogen replacement therapy may significantly delay the onset of Alzheimer's disease and lower the risk of developing it.[28,29] Several small randomized clinical trials found that treatment with estrogen improved cognition in patients with the disease.[30,31] Additionally, a clinical trial of tacrine found that women who also took estrogen exhibited significantly better cognitive performance than women taking only tacrine or placebo.[32]

The ability of estrogen to act both as an antioxidant and an anti-inflammatory agent may explain its association with a reduction in risk.[33-35] Estrogen also increases acetylcholine concentrations and may promote the growth and survival of neurons in the regions of the brain that are most sensitive to degeneration in Alzheimer's disease.[36] Additionally, it has been suggested that estrogen reduces neuronal injury by reducing the metabolism of β amyloid from its precursor protein.[37] However, not all studies have found that estrogen reduces the risk of Alzheimer's disease.[29] Because the decision to take estrogen replacement therapy may be affeted by differences in occupational, educational or socioeconomic status, the epidemiological evidence must be balanced by data from randomized, controlled clinical trials. Additionally, further studies assessing the safety of estrogen replacement therapy in treating Alzheimer's disease are required.

Anti-inflammatory drugs

The inverse relation between rheumatoid arthritis and Alzheimer's disease has led to the hypothesis that anti-inflammatory agents reduce the risk of developing the disease. Anti-inflammatory drugs may affect the inflammatory processes associated with the development of neuritic plaques. An association between the use of nonsteroidal anti-inflammatory drugs and a decreased risk of Alzheimer's disease has been identified in the literature but there have been few randomized clinical trials.[38] The Alzheimer's disease cooperative study is looking at the possible effects of steroids and is conducting a multicenter, randomized, placebo-controlled trial of treatment with prednisone in patients with Alzheimer's disease. However, some investigators have suggested that prednisone can have adverse effects on memory,[39] and adverse gastrointestinal effects have been observed in studies of anti-inflammatory drugs.[40] Several clinical trials of the potential role of the nonsteroidal anti-inflammatory cyclooxygenase-2 inhibitors both in patients with Alzheimer's disease and people at risk for the disease are under way. These inhibitors are less toxic than other nonsteroidal anti-inflammatory drugs, which is important in the treatment of elderly adults.

Antioxidants

The products of oxidative metabolism, such as free radicals, may be neurotoxic.[41] β amyloid neurotoxicity may be mediated through the formation of free radicals. Agents that protect against this oxidative damage, such as vitamin E and *Ginkgo biloba* extract, are thought to reduce neuronal damage and potentially slow the onset and progression of Alzheimer's disease. Initially, clinical trials found that treatment with *Ginkgo biloba* was associated with significant but modest improvements in cognition in patients with Alzheimer's disease.[42,43] The ability to generalize from these findings is limited because the diagnostic criteria and the outcome measures used were variable.[44] A controlled trial found that the antioxidants selegiline and vitamin E, alone or in combination, delayed progression to a mixed endpoint defined as severe functional decline, nursing home placement, or death.[45,46]

TREATING PATIENTS WITH ALZHEIMER'S DISEASE

A consensus statement on the diagnosis and treatment of dementia, produced by the American Association for Geriatric Psychiatry and the American Geriatrics Society, emphasized that cholinesterase inhibitors are the mainstay of pharmacologic treatment of patients with Alzheimer's disease.[47] In the Unites States, about 40% of patients with the disease take donepezil.[22]

Donepezil is generally prescribed to patients with mild to moderate dementia at a starting dose of 5 mg per day. Many clinicians increase the dose to 10 mg per day after 10 weeks. Side effects seem to be better tolerated if the dose is increased over this time instead of starting patients on a 10 mg dose. Since donepezil has only recently become more widely used in clinical practice data on long-term benefits are limited, and it is unclear how long patients should remain on the drug. Similarly, there are limited data available to indicate which patients respond best to cholinesterase inhibitors, although preliminary finding suggest that patients with the apolipoprotein E ε4 allele do not respond as well to these agents as patients without this allele.[48] Longitudinal follow up of patients treated with cholinesterase inhibitors will likely yield important information regarding how long treatment should be provided for and for whom it should be provided.

Although estrogen, anti-inflammatory drugs, and antioxidants seem to offer promise in treating and preventing Alzheimer's disease, their use is limited by the fact that their efficacy has yet to be established. Additionally, they are associated with a broad range of adverse side effects and physicians may be unwilling to expose their patients to these side effects without sufficient evidence of their effi-

cacy. When information is available from the larger trials that are currently in progress their benefits will be able to be assessed more fully.

The consensus statement on the diagnosis and treatment of dementia suggested that antipsychotic agents could be helpful in controlling the behavioral problems that may occur, such as agitation and aggression. The statement cautions that such agents can have adverse side effects ranging from parkinsonian symptoms to delirium and sedation. Recent studies with atypical antipsychotics suggest that low doses of drugs such as risperidone may be effective in treating agitation and psychosis in these patients.[49,50]

Several investigators have emphasized the importance of nonpharmacologic approaches to treating both the cognitive and behavioral problems associated with Alzheimer's disease,[16,51] and the necessity of providing adequate information to both the patient and the caregiver on community resources and social services.[52]

NEW DEVELOPMENTS AND DIRECTIONS FOR RESEARCH

Cholinesterase inhibitors continue to be developed and refined. Other pharmacologic developments are based on different approaches. Muscarinic agonists are being developed to enhance the effect of acetylcholine on nerve cell receptors. The depletions of other neurotransmitters, including serotonin and norepinephrine, that occur in Alzheimer's disease are also being considered as possible targets for treatment.

Reducing β amyloid is an approach also being targeted as a pharmacologic intervention. One strategy aims to develop compounds that will decrease deposits of β amyloid by inhibiting the enzymes that form amyloid but such treatments are still in the initial phases of development and safety testing.[53] Another preliminary study observed that beta-amyloid deposits were reduced in laboratory mice after treatment with a vaccine that combined amyloid with substances that stimulate the immune system.[54]

In addition to the assessment of new pharmacologic treatments for Alzheimer's disease, there is a developing emphasis on investigating which patients derive the most benefit from which treatments.

Our understanding of the genetic etiology of Alzheimer's disease continues to increase. Studies are in progress to confirm the preliminary observations of associations between Alzheimer's disease and polymorphisms in several genes, some of which may interact with apolipoprotein E to alter the risk of Alzheimer's disease (for example, the α_2-macroglobulin gene). In addition to enhancing our knowledge of the genetic etiology of the disease, future research will likely focus on increasing our understanding of the interactions between genetic vulnerabilities and psychosocial risk factors for the disease.

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A Book to Make You Think

In the blood: sickle cell anemia and the politics of race, Melbourne Tapper, University of Pennsylvania Press, 160 pp, ISBN 0 8122 34715

"Race" is a concept that has occupied a prominent place in the North American culture for centuries. Despite the vagueness of the concept, the tse of race in health research has a long and sometimes disturbing history. Thotsands of ptblications exist on black-white differences in behavior and disease patterns. Most anthropologists have rejected the traditional western notion of race—as bounded, identifiable biologic groups—both as a research tool and as valid representation of biologic diversity. Nevertheless, the racialization of disease continues to be pervasive, often providing researchers with simple and convenient explanations for complex socioeconomic determinants of ill health.

Since its identification in 1910, sickle cell anemia has been characterized as a "black" disease, despite its occurrence in people of Greek, Italian, Indian, and Latin American ancestry. *In the blood* examines why this is. Tapper's critical analysis of anthropologic, medical, genetic, and political discourses on sickle cell anemia during the past century leads him to conclude that the scientific inquiry of the disorder was driven by stch notions as racial difference and genetic purity and superiority. He argues convincingly that, by using the ostensibly value-free science of genetics and laboratory medicine, these eugenic ideas were legitimized and normalized.

Sickle cell anemia has been used to question the racial identity of white patients afflicted by the disease; to support prevalent social concerns abott the interbreeding of races and, more generally, the dangers inherent in "negro blood"; and even to uphold the notion that modern humans evolved from multiple origins. Tapper comprehensively examines these and other isstes. He provides only sketchy details, however, on how the disorder was tsed to further the cause of the civil rights movement in the United States and omits discussion abott the disastrots misinformation provided about the disease dtring the 1960s and 1970s by the Black Panthers.

Sickle cell anemia remains a controversial disorder even today. Whereas universal newborn screening for the disease has been implemented in most US states, many centers tse targeted screening. High-risk grotps continte to be identified by racial and ethnic traits. The value of universal screening is supported by the results of California's newborn hemoglobinopathy screening program, which identified 7,000 nonblack carriers of the sickle cell trait or disease among 2 million infants screened.

In the blood has something to convey beyond what it says abott sickle cell anemia. Tapper bases his work on the notion, espoused by 19th century French critical thinkers stch as Foucault and Delaporte, that disease does not exist outside of discourse and practice. It provides a fine example of an analytic framework that could be used to critically review current research linking conditions stch as hypertension, low birth weight, and the acquired immunodeficiency syndrome (AIDS) to race. I found this a stimulating read—once the ttrgid introdtctory chapter was negotiated—and a valtable contribution to the literature on the social construction of race and disease.

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A version of this article first appeared in the *BMJ*

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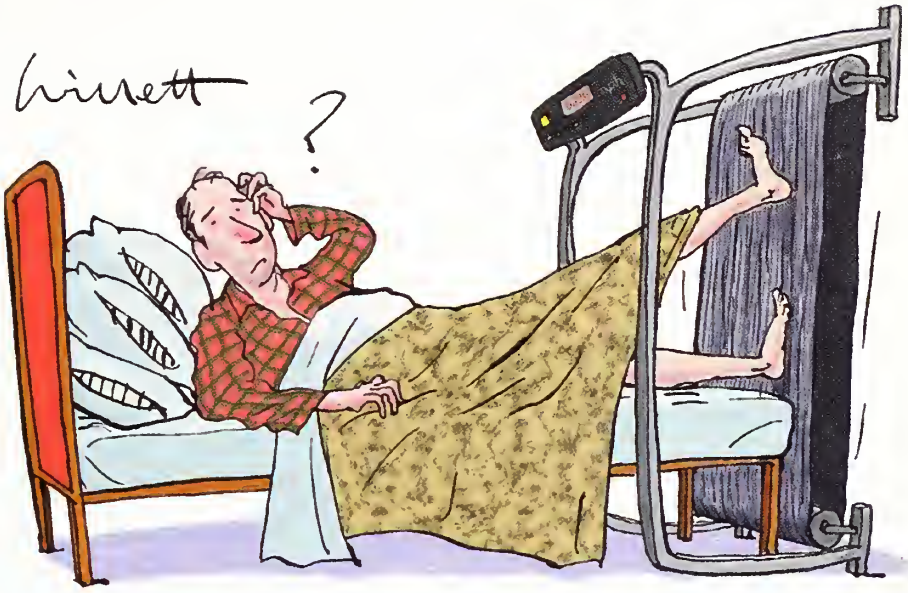
Chronic back pain: does bed rest help?



Malcolm Willett

If your patients with uncomplicated back pain get relief with bed rest and pain relievers yet you are told that bed rest doesn't help, you are not alone in your belief. When researchers from the University of Washington surveyed several thousand physicians about back pain management, most believed in the utility of prolonged bed rest along with muscle relaxants and narcotics.[1,2] Despite a plethora of research intended to guide physicians in their management of back pain, physicians still hold strong non-evidence based beliefs dating back to the 19th century.

Uncomplicated back pain is common—the fifth most frequent reason patients visit their doctor, accounting for nearly 3% of all office visits.[3] By uncomplicated we are referring to back pain that does not radiate below the knee in an otherwise healthy person between the ages of 20 and 55. Of course, primary care physicians treat only a small proportion of uncomplicated back pain; many patients go to orthopedists, chiropractors, physical therapists, and massage specialists. In fact, when studies have looked at outcomes of uncomplicated back pain, 95% of patients recover in 6 months (most within 30 days) regardless of health care provider or intervention. The specialty of the provider, however, was strongly linked to the number of visits, the cost of care, and patient satisfaction. Orthopedists had the fewest number of office visits, the greatest costs associated with care, and the least patient satisfaction. Chiropractors had the lowest cost per visit (although total care was equal to primary care physicians) and the greatest patient satisfaction. Orthopedists and chiropractors were far more likely to order tests and radiographs than primary care providers. The cost of care for uncomplicated back pain for orthopedists was $756 compared to $783 for chiropractors and $508 for primary care physicians.[4]

There is strong evidence that prolonged bed rest does not improve outcome (pain, disability, days missed from work, or functional ability). One randomized controlled trial[5] comparing bed rest, exercise, and routine care showed that bed rest was associated strongly associated with three negative outcomes (more days off from work, intensity of pain, and disability). The next question is, if bed rest does not help, is there benefit to active exercise/physical therapy? The answer is less strong, but 14 of 18 controlled studies do report that active exercise can improve outcomes.[6] Further, research suggests that specially tailored active exercise may result in fewer episodes of back pain in the future.[7]

Is there a role for imaging studies? Not in uncomplicated back pain, so say the studies and expert consensus panels.[8] What about TENS units, ultrasound, massage, and cosset use to treat back pain? The one randomized controlled trial that looked at these treatment modalities found that those with more intensive contact with a provider resulted in the greatest satisfaction but that there were no significant differences in objective outcome measures.[9]

So although some patients may need to temporarily modify their activity during the acute phase of back pain, most should be encouraged to avoid bed rest and resume normal activity as soon as possible. For those so motivated, an active exercise program appears to improve outcomes and speed recovery.

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Culture and Medicine

Emotional dimensions of chronic disease

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Advances in research and the delivery of health care have reduced mortality from disease and extended life expectancy in developed countries. We are living longer, but are we necessarily living better? Those who would have died from their condition may now survive but there is the emotional cost of long-term treatment and medical surveillance to consider (for example, the patient who has had a liver transplant must then continue immunosuppression treatment). Such patients must cope with a chronic condition and yet the emotional dimensions of these conditions are frequently overlooked when medical care is considered. Concepts such as the "sick role" and "illness behavior" have helped us understand the impact of disease and are familiar to most clinicians. Yet challenges still exist in the recognition and management of the psychological and social dimensions of chronic illness.

Summary points

- The emotional dimensions of chronic conditions are often overlooked when medical care is considered
- It can be difficult to diagnose depression in the medically ill but diagnosis and treatment are essential
- Doctors may be well equipped for the biomedical aspects of care but not for the challenges of understanding the psychological, social, and cultural dimensions of illness and health
- Clinicians can play an important part in helping their patients to maintain healthy coping skills
- Clinicians should reflect on the emotional dimensions of their work, including how professional development and training may enhance professional satisfaction and patient care, and the important role that relationships and outside activities have in providing balance

CHRONIC MEDICAL ILLNESS

Mental illness developing from chronic disease

Patients with chronic conditions often have to adjust their aspirations, lifestyle, and employment. Many grieve about their predicament before adjusting to it. But others have protracted distress and may develop psychiatric disorders, most commonly depression or anxiety. A prospective study of general medical admissions found that 13% of men and 17% of women had an affective disorder.[1] The proportion of patients with conditions such as diabetes or rheumatoid arthritis who have an affective disorder is between 20% and 25%.[2] Among patients admitted to the hospital for acute care and among patients with cancer, rates can exceed 30%[3] compared with a prevalence of depression in the community of about 4%-8%.[4]

It can be difficult to diagnose depression in the medically ill. Physical symptoms such as disturbed sleep, impaired appetite, and lack of energy may already exist as a result of the disease. Sometimes treatment for a medical condition (for example, the use of steroids) may affect the patient's mood, as may the disease process itself (for example hypoxia and infection in a patient with chronic respiratory disease may have a direct cerebral impact on mood). The functional limitations imposed by the disease may result in "understandable" distress, and some clinicians find it difficult to conceptualize such distress as a depressive disorder.[5] Indeed, the distinction between an adjustment reaction and a depressive illness is often not clear. Clarification of the diagnosis may be aided by examining the patient's risk factors for depression—that is, whether they have a history of depression, a major functional disability, or pain. Other risk factors include adverse social circumstances, such as unemployment or financial strain, and a lack of emotional support.[6] In elderly people in particular, there are clear links between physical illness, disability, and depression[7] and increased use of hospital and medical outpatient services.[8]

Despite these difficulties, it is essential to diagnose and treat depression in patients with chronic conditions. Even mild depression may reduce a person's motivation to gain access to medical care and to follow treatment plans. Depression and hopelessness also undermine the patient's ability to cope with pain and may exert a corrosive effect on family relationships.[6] Although the patient with an incurable medical illness who commits suicide may seem to some people to have acted rationally, most of the patients who commit suicide are also suffering from a depressive ill-ness.[9] Furthermore, the development of depression in people with a medical illness has been linked to adverse physical outcomes and substantial increases in disability.[10] Patients who become depressed after a cerebrovascular accident have been found to have an increased risk of dying[11] and to make significantly less recovery on measures of activities of daily living.[12] The clinical course of heart disease is also influenced by depression, and 9 out of 10 studies have found an increase in mortality from cardiovascular disease among depressed patients.[13] It is not clear to what extent the identification and treatment of depression might improve the outcome in such cases.

The process of diagnosis is often complex, as is the treatment. Antidepressant drugs may aggravate the patient's medical condition, there is the potential for drug interactions, and the presence of impaired renal, hepatic, or gastrointestinal function may alter drug metabolism.[14] Thus, selecting an antidepressant requires careful assessment of the risks and benefits.[14] However, antidepressant drugs are effective in people who are medically ill,[14] and

antidepressants are tolerated in up to 80% of patients with cancer without adverse effects.[15] The optimal treatment of depression in patients with chronic conditions also involves using a combination of cognitive and supportive psychotherapies that incorporate awareness of the grief and loss that are consequences of the disease process.

Chronic disease superimposed on mental illness

The development of a chronic medical condition in patients with a pre-existing mental illness may lead to an exacerbation of their symptoms and bring about a deterioration in their functioning. There may be delays in diagnosing medical conditions in patients with chronic psychotic conditions because these patients may fail to give their symptoms priority or they may have an impaired capacity to communicate their symptoms.

Ethical issues can arise in considering the capacity of such patients to accept or decline treatment. Psychiatrists have a valuable role in assisting patients to understand the medical issues they face and in evaluating their capacity to make informed decisions.[16]

The physical consequences of mental illness merit attention in their own right. After an episode of major depression the risk of myocardial infarction increases fourfold to fivefold when other medical factors are controlled.[17] Depression in women has been associated with decreased bone mineral density.[18] Thus, depressive episodes may contribute to the development of medical conditions that have a chronic course.

Physical symptoms as an expression of emotional dysfunction

The development of new symptoms in a patient whose condition had previously been stable may indicate that the patient is emotionally distressed. The exacerbation of an established illness, such as the development of pseudoseizures in a patient with epilepsy, may indicate adjustment difficulties, depression, or complex social or relationship problems. The key symptoms of the so-called somatoform disorders are physical complaints, excessive fear of physical illness, or the excessive and unwarranted pursuit of medical or surgical treatments.[19] Despite their frequency in general medical practice, these problems can be some of the most difficult for doctors to manage, and doctors report finding patients with these disorders among the most difficult to help.[20] A doctor's use of effective patterns of communication[21] can reduce the risk of chronic morbidity and disability.[22]

ISSUES AFFECTING CLINICIANS

Patients with chronic medical conditions may provoke feelings of anxiety and professional inadequacy; they may also become an emotional burden on the clinician who is exposed to the cumulative suffering and losses experienced by patients and their families. Counterbalancing these feelings may be the sense of fulfillment derived from providing consistent and unflinching care and the deep appreciation expressed by patients. The number of patients coping with chronic conditions seems to be growing because of improvements in treatments and increases in survival times, particularly for conditions such as HIV infection and some malignancies.

A group of breast cancer survivors crosses a ceremonial finish line after a fundraising walk

Maintaining the patient's hope

For patients and their families, hope is an integral part of coping. The clinician has a key role in engendering realistic hope. Maintaining hope is key for long-term survivors of HIV infection[23] and long-term survivors of breast cancer.[24] Healthy coping, however, differs from the popular notion of "positive thinking." It implies the capacity to tolerate and express concerns and emotions not just the ability to put anxieties aside. Being able to discuss the anxieties, uncertainties and fears, losses and sadness that usually accompany severe illness is generally helpful, despite the pressure commonly exerted by family and friends for the patient to always "keep a positive outlook."[25] "Positive thinking" may represent an attempt to avoid confronting the distress of chronic illness, and doctors who care for these patients and their families are not immune to such patterns of coping. A study of women with breast cancer found that those who sought alternative treatments had higher levels of psychological morbidity [26]: the pursuit of such treatments might thus indicate the patient's distress rather than their well-being.[27]

Moving towards the terminal phase

Recognizing that the condition has progressed and that the patient is approaching the terminal phase of their disease may be distressing for staff who have known the patient well. In some cases the patient may be reluctant to discuss the need to change treatment goals or the possi-

bility of death, but in others it is the doctor's avoidance that limits the chance for the patient to raise these issues.[28] Staff may be reluctant to relinquish more aggressive treatments. It is worth remembering that health professionals' appraisals of treatments that they would accept are different from appraisals made by patients with cancer.[29] Patients with a chronic illness sometimes report a surprisingly high level of satisfaction with their quality of life.[30] Also, clinicians may underestimate the quality of life maintained by patients with chronic illness and by elderly patients.[31] Patients may attach greater importance to their mental health than their doctors do; doctors may focus on their patients' physical limitations.

Treatment issues

Adverse effects of treatment

The side effects of some treatments, for example those caused by steroids, may lead to frustration and anger; these feelings may be mediated by an emotional reaction to changes in the patient's body and symptoms but may also be the direct result of the effect of the treatment on the patient's mood. The clinician may experience guilt about such side effects. Additionally, patients who are angry, demanding, or resentful may engender powerful feelings of rage in staff.[32]

Compliance

Although adherence to prescribed treatments may improve the course of a disease, the clinician cannot promise the patient that "being good" will be rewarded; in some diseases, such as diabetes, impairment may still occur. Young patients, in particular, may test limits and challenge the status and knowledge of the staff caring for them. Compliance may be poor even in patients who have had an organ transplanted. There may be conflict between a patient and a clinician about the proposed treatment. In chronic fatigue syndrome, for example, evidence has emerged about the benefits of cognitive therapy [33] and the importance of exercise.[34] If patients and their families are resistant to these approaches, long-term care may be adversely affected.

Psychosocial aspects of care

Psychosocial interventions are increasingly being incorporated into routine medical care, and these approaches seem to be effective. In patients with rheumatoid arthritis, the use of interventions to manage stress has resulted in significant improvement on measures of helplessness, dependency, coping, and pain.[35] Comparatively simple interventions that allow patients with asthma and rheumatoid arthritis to express the psychological impact of their disease and other stress have significantly improved symptoms in these patients.[36] The families of patients who are chronically ill tend to be more depressed and are more likely to have other psychological symptoms.[37] Clinicians should be aware of this hidden morbidity among carers.

HOW CAN HEALTH PROFESSIONALS COPE?

Recognizing of the cost of caring

Clinicians who treat patients with a chronic illness must not ignore their own needs. Clinicians may be exhausted by the emotional needs of their patients. When the clinical course is stormy or the patient rejects treatment or commits suicide the sense of professional isolation and despair may be intense. There is strong socialization against members of the medical profession discussing their own distress for fear of appearing weak. At least half of the physicians in one study reported high levels of emotional exhaustion.[38]

Factors that shape responses

Confronting feelings of helplessness and the limitations of the medical treatments available may elicit a range of responses from health professionals. These responses may include rejecting and withdrawing from the patient, blaming the patient for failing to recover, or taking excessive personal responsibility for the patient's failure to recover. Both under- and over-treatment of the patient may ensue. Such problems are illustrated in the widespread debate over the care of dying patients and doctors' responses to "incurable" suffering.[39]

Health professionals do not work in a vacuum. Medical care is increasingly provided in a complex clinical and ethical landscape of public scrutiny and economic accountability. The technological complexity of medical treatment in areas such as transplantation surgery and intensive care, for example, brings clinicians face to face with complicated ethical issues on prolonging the end of life or allocating resources. Demands are made for "evidence-based care," but in many areas evidence is either unavailable or limited, causing further concern among clinicians.

Education and training

The responses made by health professionals to difficult clinical situations depend on their training and life experiences.[40] The clinical experiences of junior doctors rotating through a range of specialty attachments and participating in specialist training programs frequently fails to provide them with the experience of treating patients over a long period. Short-term contact with patients with severe chronic illnesses in hospital settings may provide junior doctors with a distorted perspective on the course of such illnesses, the role of medical treatments, the needs of patients, and their own potential responses. Surveys of medical graduates show that they are aware of these deficiencies in their training.[41]

Doctors may be well equipped for the biomedical aspects of care but the challenges of understanding and

responding appropriately to the psychological, social, and cultural dimensions of illness and health need to be addressed.[42] Many clinicians also feel that providing emotional support for families is a source of stress.[43] Medical education must include information on the emotional aspects of diseases and their impact on the patient, the patient's family, and the clinicians treating them. Communication skills are vital. Clinicians who feel that they have received insufficient training in communication and management skills have significantly higher levels of distress than those who feel they have sufficient training.[44]

Team membership and use of external resources

When a clinician is part of a multidisciplinary team it is possible to discuss difficult clinical problems, share the burden of care, and gain access to the specialist skills of other staff and agencies. Non-governmental agencies and volunteer support groups can provide social support, education, and advocacy for patients with chronic physical and mental illnesses. Clinicians have a key role in linking patients with such groups. These organizations can counteract the social isolation and stigma experienced by many patients with chronic illnesses.

Self-care

Working excessively long hours is not conducive to providing high quality health care, and clinicians should consider exerting control over their clinical work and setting their own priorities.[45] Clinicians should reflect on the emotional dimensions of their work, including how professional development and training may enhance professional satisfaction and patient care, and the important role that relationships and activities outside of work have in providing balance. Physicians cannot provide excellent clinical care if they fail to nurture themselves physically, emotionally, and spiritually.[46]

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How to deal with medically unknown symptoms

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The term medically unknown symptoms covers various symptoms and diagnoses that change with the advance of medical knowledge.[1] Included in this term are illnesses such as fibromyalgia, chronic fatigue syndrome, irritable bowel syndrome, environmental sensitivities, and chemical intolerances (sometimes referred to as multiple chemical sensitivities). Although the acceptability of these symptoms as real depends on the cultural and medical climate in which they are seen, patients will continue to appear in physicians' offices with these types of complaints. Denying that patients have these symptoms will only make their problems worse.

Controversy exists over whether medically unknown symptoms are psychologic, physiologic, or both. Proponents of somatization would place medically unknown symptoms in the realm of psychologic disorders.[1-4]

ENVIRONMENTAL SENSITIVITIES SYNDROME

Environmental sensitivities may best be considered a multisystem, multisymptom syndrome. The most widely used definition suggests that both environmental sensitivities and multiple chemical sensitivities are characterized by recurrent symptoms referable to multiple organ systems and occurring in response to exposure to many chemically unrelated compounds at doses far below those established in the general population to cause harmful effects. To date, no single widely accepted test of physiologic function has been shown to correlate with symptoms.[5]

Ongoing debate in medical circles over the definition that should be applied to this clustering of medically unexplained symptoms has produced various labels. These range from multiple chemical sensitivities[5-7] to environmental hypersensitivity syndrome,[8,9] total allergy syndrome,[10] environmental illness,[11] idiopathic environmental intolerance,[12] and environmental sensitivities (the last currently in use by the Nova Scotia, Canada, Environmental Health Center), just to name a few. The definitions are either narrow or so nonspecific that almost anyone could be included under their label.

In 1995, the province of Nova Scotia reported that 3% of its population was chronically affected by environmental illness.[13] In a population study, Meggs and coworkers found that 33% of the US population reported chemical sensitivities, with 4% being affected on a daily basis.[14] Recent statistics place the prevalence of environmental illness, diagnosed by a physician, at 6% of the California population. A further 16% report being "allergic or unusually sensitive to everyday chemicals."[15]

TRADITIONAL WESTERN MEDICINE VERSUS CLINICAL ECOLOGY

Western medicine seeks to practice evidence-based medicine.[16,17] This is not the case for physicians who are clinical ecologists and practice environmental medicine. These physicians advocate the avoidance of a wide range of chemicals and the use of nonvalidated tests and treatments.[18,19] Clinical ecologists think that the symptoms triggered by perfumes or other chemicals are physical and that environmental sensitivities are pathophysiologic.[18] They think that personal observations and experience are all that are necessary to diagnose and treat people with medically unknown symptoms.[18] Their theories and practices have been condemned by most medical societies. Relying on personal experience alone may result in incom-

Summary points

- The term medically unknown symptoms covers a multisymptom, multisystem, and multifactorial problem that has yet to have a widely accepted definition
- Medical practice traditionally involves making a clear diagnosis before intervening and before healing may occur
- Standard appointment times are not long enough for patients with medically unknown symptoms to tell their story
- Poor communication exacerbates the chronicity of the condition
- Patients respond better if physicians listen with respect, acknowledge their experience, and reassure them

plete diagnoses, missed diagnoses, and assigning incorrect labels that perpetuate illness as opposed to leading to recovery.

Traditional medicine needs a clear diagnosis that corresponds with a particular disease. When patients have symptoms that fall outside current medical classifications of disease, physicians tend to classify these symptoms as psychological in nature. This can alienate patients, and they will seek opinions (often frequent and multiple) from other specialists. In unpublished data for 1999, the provincial department of health for Nova Scotia found that people with environmental sensitivities used health services 5.5 times more than matched controls.

Relying on a precise diagnosis may be counterproductive for both physicians and their patients. Physicians may find themselves increasingly frustrated by their inability to understand and solve the problem. For patients, the need to have a clear diagnosis for their experience may shift their focus to symptoms to the exclusion of all other aspects of their life. In addition, patients may become isolated from their families by the lack of a label of an illness for their symptoms. This lack of validation by physicians leads many patients to turn to alternative practitioners such as clinical ecologists.

The avoidance of inciting triggers seems a commonsense approach. But avoidance may foster isolation, poor coping skills, and further disability in a person. Furthermore, after undergoing testing methods shown to be unreliable,[19] people are often told that they are sensitive to a wide variety of triggers, making avoidance a difficult, if not challenging, task.[20] At the same time, reliance on a tool that may falsely identify sensitivities limits persons' ability to function, compromising their overall health. Inevitably, everything becomes a possible trigger of symptoms, creating an atmosphere of fear.

THE SYSTEM

The design for appointment visits may not always be adequate for patients, particularly when the patients have symptoms that apparently defy the usual diagnostic criteria (table). Environmental sensitivities are a multifactorial problem that encompasses physical and biologic factors such as pesticides; poor indoor air quality; a genetic predisposition; social issues, such as dynamics in the workplace and financial stress; and psychologic factors that include a variety of personality disorders. Therefore, the standard physician's appointment of 15 minutes may be insufficient for gathering all the facts. Patients frequently express their frustration and anger over feeling rushed to impart information. This may lead to incomplete disclosure, thus compromising a physician's ability to make an accurate diagnosis.

At the Nova Scotia Environmental Health Center, the average duration for an appointment ranges from 34 to 45 minutes. At the same time, 16% of patients at the Center make up 40% of the visits. This suggests a burden of time for physicians that would be difficult to provide in a busy family practice.

Table *Top 10 symptoms reported since start of illness and ranking by sex (N = 381)*

Symptoms	Total, %	Ranking Men	Ranking Women
Fatigue or very tired	95	1	1
Difficulty concentrating	93	2	2
Tiredness not relieved by rest	92	3	3
Forgetful or poor memory	90	5	4
Sneezing or runny or congested nose	90	4	5
Irritability	89	6	7
Other headaches	88	9	6
Itchy eyes	86	10	9
Trouble finding right words	85	19	8
Throat clearing	83	8	12
After exposure			
Sneezing or runny or congested nose	64	1	1
Itchy eyes	61	2	2
Difficulty concentrating	52	3	3
Other headaches	48	8	5
Burning eyes	47	5	6
Hoarseness or loss of voice	46	40	4
Stuffy or full sinuses	45	4	9
Forgetful or poor memory	45	27	7
Tight chest	43	19	8
Usual odors sickening	42	6	13

Further compounding the situation are communication problems in the patient-physician relationship. Communication has been cited as one of the most valuable skills a physician could possess.[21] Despite this, patients often express dissatisfaction with this aspect—77% of patients visiting a physician's office to convey their illness narrative are interrupted, and most of these interruptions occur within the first 20 seconds of the visit.[22]

PATIENT PERCEPTIONS

Ignoring patients' symptoms or labeling them psychologic, by default, forces patients further into a system (socially and medically) whose attitude increases the trauma of not only being ill but also stigmatized.[23] Unable to acquire answers and continuing to experience symptoms that may be frightening because of their indeterminate nature, patients see themselves as more and more disabled and traumatized.[24] Many withdraw from family and friends, unable to cope with the stigma and stereotyping. The fact that symptoms wax and wane makes it difficult for patients to perceive themselves as well. Rather, they begin to see themselves as chronically ill.

SOLUTIONS

Four simple solutions can improve the health outcomes of persons with environmental sensitivities. The most impor-

tant step involves respectfully listening to patients describe their symptoms, without labeling the symptoms prematurely as predominately psychologic. The physician should avoid cutting the patient off in midsentence. Second, every illness has both a psychologic and a physical component, but an accurate assignment of percentage for each may not be possible. Acknowledging the experience for patients increases the likelihood that they will work with you to get better. Third, reassure patients that, although they may continue to have symptoms, their level of functioning will improve. Finally, do a complete assessment, which should include an occupational and environmental history to understand possible triggers. If this health concern is aggressively attended to early, the pitfalls of patients developing chronic illness may be avoided.

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When AIDS became a chronic disease

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"The flu gives you a fever, but your mother puts you to bed."

Folk saying

A basic tenet of medical anthropology is that illness is socially constructed. Agents of disease produce physical symptoms in people, but relatives, friends, and health professionals surrounding a sick person classify and interpret those symptoms to determine if he or she is ill. How a society interprets and classifies symptoms, prescribes treatment, and assigns the sick role vary with many factors, from geographic location to political economy.

In June 1989, Samuel Broder, then head of the National Cancer Institute, declared in a speech at the international AIDS meeting in Montreal, Quebec, that AIDS was a chronic illness and that treatment should follow the model of cancer.[1] This public statement marked a shift in the social definition of AIDS from an acute to a chronic illness, a shift with economic and cultural repercussions for the treatment and understanding of AIDS at the national, local, and individual levels.

CULTURE AND ECONOMY

The relation between political economy and cultural concepts of disease and treatment is illustrated in Fabrega's comparison of contemporary foragers and village societ-

Summary points

- Illness is socially constructed. We are not sick until those around us agree that we are. The social construction of chronic illness and the sick role depend on a complex social structure
- AIDS is now viewed in the Western world as a chronic, life-threatening illness with two phases: HIV infection and AIDS
- The redefinition of AIDS affects all levels of social life—international, national, local, and individual
- People who are HIV-positive or have AIDS face the stigma of chronic illness. Stigma reflects a discredited and negative social identity
- The chronic character of AIDS, with periods of crisis alternating with periods of stability, requires those with AIDS to continually reorganize their view of their life's expected course

ies.[2] Nomadic foragers hunt animals and gather plants for food that is distributed equally among all members. Labor is also divided equally. Although men generally hunt and women gather, most members of the society can perform any essential task. Because group size is small—30-50 people—every member's labor is important. Because foraging communities lack surpluses of food, nonproductive members consume precious resources and threaten the group's survival. Given these features, it follows that symptoms defined as disease are limited to acute conditions that are dramatic and life threatening or prevent the person from working. Moreover, foragers experience few chronic illnesses, such as parasites or epidemics of infectious diseases like measles, because they move frequently, and few of them live together in one place. Consequently, treatment is limited to those who are dangerously ill, with minor acute ailments and chronic illnesses largely ignored.

In contrast, in village societies where food is cultivated, enough surplus exists that some members of the society can be marginally productive in agriculture or husbandry. With this comes greater division of labor, including individuals who acquire specialized skills in diagnosis and healing. At this level of social organization, adopting the sick role—that is, being relieved of normal roles and obligations to get well—becomes possible. In addition, because of the sedentary character and dense population of village life, such chronic diseases as parasitic infections and acute viral and bacterial infections are endemic. Thus, the range of defined diseases expands, and the boundaries between illness and health become less clear.

In the industrialized market economy of the United States, with its many specialized jobs and tasks, the role of one person in production is minor, and enough surplus wealth exists to support many nonproductive people. Public resources expended for sanitation, vaccinations, and the development of antibiotics have reduced the incidence of acute illness. Consequently, chronic illnesses have become more common. Moreover, medical specialization and technology create chronic conditions by rescuing patients from life-threatening situations that nonetheless leave a residual loss of function or chronic illness.

CULTURAL DEFINITIONS OF ACUTE AND CHRONIC

Acute and chronic are culturally defined categories of illness recognized by health care professionals and their clients. The difference between these categories is more than a matter of time; their meaning to society and to the individual differs significantly. Acute illnesses are characterized by a sudden onset, obvious signs and symptoms, and some limitation of normal function—even if only an annoying cough or low-grade fever. Treatment is either supportive or curative, and resolution to death or normal activity ensues. The duration consists of days or weeks. Acute illness follows a predictable course; if it does not, it is redefined as chronic illness. One of the most pervasive features of human culture is the use of symbols and metaphors. In the United States, metaphors for acute illness arise from the arena of war: viruses invade, bacteria attack, and parasites infest. Treatment consists of strengthening defenses, killing bacteria, or battling an infection. We speak of heroic measures and rescue operations.

Chronic illness, in contrast, may arise from an acute episode that does not resolve to full health—for example, a diabetic coma. The course of a chronic illness is uncertain and unlimited in time, usually characterized by alternating periods of acute crisis and remission. The disease may not produce visible symptoms, as with hypertension. Treatment is directed at relieving symptoms and slowing degeneration, not effecting cure. Metaphors for chronic illness are drawn from the language of business: symptoms are managed, crises are averted, support systems are organized, and regimens are designed. Whereas the battle against acute illness is dramatic and heroic, the management of chronic illness, despite its complexity, is banal. Reflecting these priorities, our health care system rewards surgeons more than internists.

AIDS AS A CHRONIC ILLNESS

At the international level, inequality in wealth between developed and developing nations has produced essentially two types of AIDS: chronic AIDS in the Western world, where resources are available for treatment with zidovudine and other drugs, and acute AIDS in the developing world, where there are no funds for such treatments.[3]

On the national level, AIDS as a chronic illness means a shift in the priority it receives in national health policy and a growing inequity in how resources for its treatment are allocated among the population. Despite initially being

seen as confined to gay men, once transmission to women, children, and heterosexual men was identified, its control was given high priority from public health officials and government agencies. Political activity by gay men, most of whom were white, deliberately played on fears of virulence and heterosexual transmission and was effective in securing government support for research and treatment.[4]

Advocates for research and funding for the management of AIDS must compete with advocates for people suffering from other chronic, life-threatening illnesses—for example, cancer, diabetes mellitus, and hypertension. The recognition that most new cases of AIDS occur among heterosexuals has changed public perceptions and policy in several ways. First, AIDS has become normalized in the sense that more of the population is viewed as vulnerable to infection. Although this is helpful in reducing the stigma associated with the disease and takes some of the pressure off the gay community, it has broken down some of the political alliances that mobilized advocacy for people with AIDS in the 1980s. Secondly, the incidence of AIDS is several times higher among African American and Hispanic men, women, and children than among white men, women, and children. Given that minority populations have lower rates of health insurance coverage, treating AIDS means increasing public expenditures on a broad scale. As a chronic illness, AIDS is another problem in a health care system already riddled with problems.[4]

Chronic illnesses, because of their uncertain course and often complicated, multisystem treatments, require the mobilization of a network of family, friends, health care professionals, and services for their management. Organizations that arose to assist people dying of AIDS, whose social networks had been decimated by the epidemic, have had to change their orientation to providing episodic assistance during acute crises. Project Angel Heart in Denver, Colorado, provides meals to people with AIDS who cannot prepare meals for themselves or who need supplemental nutrition because of their treatment regimens. Although their clients may have long periods during which they do not need the service, clients may stay on the rolls for many years instead of only a few months. Medical regimens and appointments with physicians, therapists, nutritionists, and other specialists require enormous expenditures of time, energy, and resources on the part of not only people with AIDS but also their friends and family. The health of caregivers may be adversely affected as well.[5]

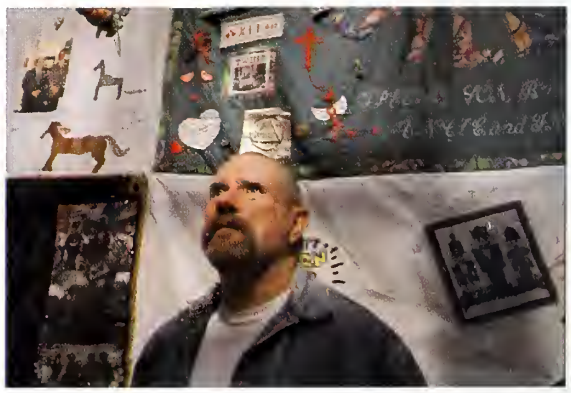
Writing in 1988, Susan Sontag asserted that "It seems that societies need to have one illness which becomes identified with evil, and attaches blame to its 'victims.' "[6] Certainly, in the early 1980s, AIDS, with its virulence, epidemic spread, wasting of the body, and sexual mode of transmission, served that social purpose well. Now that it is viewed as a chronic, life-threatening but not immediately fatal illness present in the general population, its power as a metaphor for evil is diminished. The development of the category HIV positive, a result of treatment that can forestall the progression to AIDS, has also alleviated some of the public fear of the disease and those who have it. This is good news for those with AIDS; however, chronic illness brings its own social challenges.

THE STIGMA OF CHRONIC DISEASE

Most chronic illnesses carry a stigma. Sociologist Erving Goffman defined a stigma as " . . . a failing, a shortcoming, a handicap."[7] Every society embodies models or paradigms of how a healthy, normal, whole person appears, acts, feels, and thinks. An attribute that causes the person to deviate from normal is a stigma. Because the attribute violates the expectations of normal behavior or appearance, it is discrediting and negative. Deviant people are viewed as somehow responsible for their abnormality; thus, their moral character is also challenged.[7] Moreover, stigmatized people share society's view of what is normal. They know they fail to match the model.

Chronic illness can be stigmatizing in a variety of ways—by visible disabilities and abnormalities such as an amputated limb, by limited independence or mobility (for example, the use of a wheelchair or a cane); by impairing a normal daily routine (for example, frequent hospitalizations or the inability to work full time or at all), or by the diagnosis itself and the impending death it implies. Even in the absence of visible symptoms, people who are HIV positive are stigmatized once their diagnosis is known. Reactions are rarely predictable, thus generating a great deal of anxiety in encounters with strangers or new acquaintances.

People cope with stigma in many ways. Some openly declare their diagnosis and challenge those around them to treat them differently. Some hide and retreat into a self-imposed isolation. Some may restrict their social life to people who are also HIV-positive or who have AIDS.



AP Photo/Susan Ragan

John West, who has AIDS, teaches and is working on his master's degree

What pervades social interaction is that the person with AIDS or HIV infection is expected to manage the awkward and difficult emotions that may arise.[8]

Finally, living with a chronic disease requires a different view of the self and the meaning of the illness and one's life. When AIDS was an acute illness, the diagnosis was delivered as a death sentence. Wills were written, funeral plans made, and possessions distributed to friends and family. Many long-term survivors have described the reorganization their lives had to undergo as they realized that if, indeed, they were going to die, it might not be anytime soon. In some respects, the uncertainty of chronic illness is as difficult to live with as the knowledge that you will soon die.

BELIEFS ABOUT NORMAL LIFE

All societies hold beliefs about what the normal life course should be. Anthropologist Gay Becker observes that in the United States, the life course is generally viewed as a linear progression of events from birth to death in a predictable sequence. Life is an orderly process. Chronic and life-threatening illnesses challenge this view of continuity and order. Life is no longer predictable. During an acute crisis, a person's life is suspended. As the crisis subsides, the person must make sense of it to reestablish continuity and normality. Becker says, "Management of a serious chronic illness that has frequent ups and downs entails a continual reworking of identity." Many HIV-positive people suddenly realized they have a future, if limited, where there had been none. The energy required to reorganize one's identity to move forward into the future, and the disappointment, frustration, and depression that can occur when the process must be repeated after a crisis, should not be underestimated. One consequence of chronic illness is that the responsibility for all aspects of management—physical, mental, and social—increasingly falls on the shoulders of those who have the illness. In the absence of a crisis, it is easy to forget that people with an illness are still working hard to care for themselves and to resume what could now constitute a normal life.

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Individualized stepped care of chronic illness

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The routine care of people with chronic illnesses often fails to follow evidence-based guidelines or to achieve optimal outcomes.[1,2] Because of the high prevalence and costs of chronic illness care[3,4] and the key role of primary care physicians in managing chronic illness, enhancing care and outcomes in primary care settings is a public health imperative.

There are important general issues about how chronic conditions are effectively managed.[1,5,6] Identifying these generalities is essential if the potential advantages of primary care of chronic illness are to be realized. Evidence-based guidelines for diverse chronic conditions identify similar elements of patient care (table).[7-12] These elements include a well-defined care plan, patient education, scheduled follow ups, outcome and adherence monitoring, the targeted use of specialist consultation or referral, and the use of stepwise treatment protocols. Despite evidence that these elements of chronic illness care improve patient outcomes, they are often inadequately organized and delivered.[1]

PROBLEMS IN CHRONIC ILLNESS CARE

The diagnosis and treatment of specific diseases are overemphasized relative to developing a treatment plan with patients, patient education, setting a follow-up schedule, and managing the consequences of treatment in a patient's daily life.

The initial assessment is given greater emphasis than monitoring adherence and outcomes. In general, it is dif-

Summary points

- Efforts to improve the care of chronic illness require effective systems capable of implementing those treatments on a population basis
- Despite evidence that patient outcomes are improved by implementing clinical guidelines through organized practice systems, how to accomplish the key elements of good patient care in routine practice remains unclear
- Limited professional resources is a substantial barrier to ensuring essential services
- Under stepped care, simpler interventions are tried first, with more intensive interventions reserved for when a good outcome is not achieved
- Stepped care provides a framework for achieving professional support for chronic illness that is cost-effective and is based on patients' observed response to treatment

ficult to predict patient outcomes and treatment response in chronic disease. Finding the "right" treatment for a particular patient can depend as much on monitoring treatment adherence and response as it does on a comprehensive diagnostic evaluation.

Physicians focus on presenting problems and illness crises while neglecting preventive follow up. Faced with competing demands for time and attention,[13,14] physicians neglect preventive health follow up and services that may help avert complications.

Failures in treatment adherence and lifestyle change are attributed to problem patients rather than system deficiencies. Chronically ill patients often do not carry out prescribed treatments or achieve desired changes in diet, exercise, and other health behaviors.[15-18] It is more productive to organize practice systems and implement approaches to patient care that improve patient follow-through on treatment plans.[19,20]

Although a collaborative approach is needed to treat chronic illness, the specific roles of primary care physicians, specialists, allied health professionals, and patients in chronic illness care remain unclear.[1,5]

PROVIDING EFFECTIVE CARE FOR CHRONIC ILLNESS

Improving the care of patients with chronic illness depends on reforming systems for and approaches to chronic illness care and implementing specific clinical guidelines. The chronic illness care model of Wagner and coworkers provides a systems approach to improving care.[1] Decision support (for example, clinical guidelines), practice design (that is, defining provider roles and organizing care to ensure active follow-up), self-management support (such as patient education), and clinical information systems (such as care registries and reminders) are elements of effective systems for the care of patients with chronic illness.

Enhanced collaboration between patients and physicians improves patients' outcomes.[5] Collaborative management of chronic illness involves setting goals and developing a care plan with patients, training and support for self-management, and active follow up to monitor success and modify care as needed.[5] Care management services using structured protocols and active follow up have produced beneficial effects for a range of chronic conditions.[21-26] Specialty consultation services can improve patients' outcomes when the focus is on implementing treatments based on guidelines, rather than patient assessment alone.[27,28] Randomized trials of consultation services consisting of "assessment only" interventions have not proved successful.[29-31] The evidence suggests that when care that is based on protocols is implemented, outcomes for patients with chronic diseases can be improved when self-management training and support are combined with the right level of active follow-up and support.

A fundamental problem in organizing the care of patients with chronic illness, then, is providing the right level of support. However, professional resources for the various elements of this care are limited—the need for these services seems far greater than the professional resources that are available and the ability of patients and insurers to pay for the services.

Stepped care has been advocated for managing diverse chronic conditions in ways that initially rely on less expensive interventions.[32-46] Stepped-care protocols are sequential clinical guidelines for assigning treatments to patients based on observed outcomes. Stepped-care principles, however, have broader implications for the organization of cost-effective practice systems and the delineation of patient and physician roles in collaborative approaches to chronic illness care.

AP Photo/Murrae Haynes

Patients with arthritis benefit from exercise in a therapy pool

Generic elements of chronic illness care included in evidence-based guidelines for 5 chronic conditions

Elements	Rheumatoid arthritis[7]	Depression[8]	Asthma[9]	Diabetes mellitus[10]	Heart failure[11,12]
Treatment plan	Yes	Yes	Yes	Yes	—
Patient education	Yes	Yes	Yes	Yes	Yes
Scheduled follow-up	Mentioned	Yes	Yes	Yes	Yes
Outcomes monitoring	Yes	Yes	Yes	Yes	Yes
Adherence monitoring	Yes	Mentioned	Yes	Yes	Yes
Stepped therapy	Yes	Yes	Yes	Yes	Mentioned
Specialty consultation and referral	Yes	Yes	Yes	Yes	Yes

WHAT IS INDIVIDUALIZED STEPPED CARE?

Stepped care provides a framework for the care of patients with chronic illnesses that uses limited resources to their greatest effect on a population basis. Stepped care is based on three assumptions: different people require different levels of care; finding the right level of care often depends on monitoring outcomes; and moving from lower to higher levels of care based on patient outcomes often increases effectiveness and lowers costs overall.

The use of stepped care has been advocated for many chronic conditions, including hypertension,[32,33] diabetes mellitus,[34] nicotine dependence,[35-37] high cholesterol levels,[38] asthma,[39] bulimia,[40] gastroesophageal reflux,[41] back pain,[42] alcohol dependence,[43] and depression.[44-46] Donovan and Marlatt[43] defined stepped-care processes as "the least costly, least intensive, and least restrictive (that is, requiring the least total life-style change for the individual) treatment judged sufficient to meet the person's needs and goals should be attempted initially before more costly and restrictive treatments are attempted." Although stepped care is guided by the response to treatment, tailoring the care based on severity, clinical status, and patient preferences is appropriate,[37] so first-line treatment is not always the least intensive, least restrictive, or least expensive regimen. Initial and subsequent treatments are selected according to evidence-based guidelines in line with patient goals, treatment preferences, and clinical status. Patient adherence, treatment response, and outcomes are actively monitored and treatments modified as needed to achieve the best possible outcome for each patient.

ORGANIZING STEPPED CARE

In stepped care, the intensity of professional care is augmented for patients who do not achieve an acceptable outcome with lower levels of care. A stepped-care model (figure) defines four levels of professional support for managing chronic disease.[45] In this scheme, acute and chronic care use evidence-based guidelines, and both use collaborative management. The level or intensity of care is guided

Individualized stepped care: a scheme for managing chronic illness in primary care

	Acute (episodic) care	MANAGEMENT CONTINUUM	Chronic care	
Goals	• Control disease • Decrease symptoms • Prevent disability • Prevent chronicity	EVIDENCE-BASED PROTOCOLS GUIDING CLINICAL MANAGEMENT AND LEVEL OF CARE	• Prevent complications • Prevent relapse • Minimize disability	GOALS
Level 1	• Recognition and diagnosis with screening and diagnostic tools • Watchful waiting with active follow-up for subthreshold illness	FOR ALL PATIENTS AT EACH STEP **Collaborative Management:** Shared problem definition, goal setting and care plan + Self-management training & support + Active following-up	• Monitoring patient status to guide long-term management • Preventive care	Level 1
Level 2	• Treatment by the primary care physician		• Self-management with low-intensity support	Level 2
Level 3	• Speciality consultation in support of primary care management		• Lower intensity car management services	Level 3
Level 4	• Referral to specialty setting for more complex or intensive intervention and/or to refine care plan		• Higher intensity care management services	Level 4

Figure adapted from Tiemens.[45]

An example: stepped care for depressive illness

Many depressed patients in primary care have subthreshold illness that does not benefit from active treatment.[48] For these patients, watchful waiting (level 1 of acute care) may be a preferred option.[8] Other patients show complete remission of depression when treated by their primary care physician without specialist or the support of a care manager (level 2 of acute care).[27,28] Some depressed patients, however, continue to have symptoms after initial treatment. When identified by an assessment of depression outcomes at a follow-up visit, these patients may benefit from specialist consultation and brief intervention designed to augment primary care treatment without transferring responsibility to specialty care (level 3 of acute care).[27,28] Among patients requiring specialist involvement in acute care, a few who continue to show a poor outcome at follow-up may require more intensive specialty care than practical in the primary care setting.[46] Responsibility for these patients may be appropriately transferred to specialty care (level 4 of acute care), either permanently or until a care plan that can be implemented in primary care is more fully developed. At the lowest level of chronic care, a plan for monitoring depression severity and relapse is needed[8] (level 1 of chronic care).

Patients actively treated for depression benefit from training and support in implementing pharmacologic and behavioral treatments[27,28] (level 2 of chronic care). Patients requiring higher levels of support may benefit from care management services that ensure ongoing follow-up and adaptation of care[26,46] (levels 3 and 4 of chronic care). In particular, an important subset of patients may require maintenance medication or maintenance psychotherapy long term to prevent relapse.[8] These patients, in particular, may require some form of care management to assist them in carrying out these interventions.

by observed outcomes. Active follow-up is used to determine the level of care each patient requires over time.

For both acute and chronic care, screening for specific conditions and diagnostic, preventive, and outcomes monitoring services are included in the lowest level of care (level 1) and applied to all patients in the target population. Patients appropriate for active treatment (level 2) may be managed initially with a first-line treatment plan implemented in primary care and combined with low-intensity self-management training and support (such as educational counseling and proactive telephone follow up from a practice nurse). Patients who do not show a favorable response or who require greater support may be appropriate for level 3, in which specialist consultation with a specific time limit and/or limited care management services are offered in the primary care setting. Finally, more complex and difficult to treat patients, identified by a lack of response to lower intensity care, may be appropriately managed by a specialist or care manager, possibly with responsibility transferred to specialty care temporarily or permanently (level 4). For some patients with severe illness or complex treatment needs, a higher level of care (level 3 or 4) may be the appropriate first step in care.

This increasing intensity of professional services is consistent with existing practice patterns and norms in primary care.[47] Important differences exist between this stepped-care approach and existing community standards for referral. Individualized stepped care assumes higher levels of coordination between specialist care, care management services, and primary care than generally exist. Collaborative management implies that the primary care team, specialist-consultant, and care manager (when needed) work together to provide the level of professional support needed for effective self-management and to achieve an acceptable outcome, no more and no less. Each member of the team fulfills a clearly defined and differentiated role in the patient's care, rather than functioning as a multidisciplinary team that is coordinated by meeting frequently to discuss individual cases. Primary care physicians, the care manager, and the specialist-consultant may not have formal case conferences but may communicate informally as needed to develop, adapt, and implement care plans for individual patients.

CONCLUSIONS

Individualized stepped care is an approach in which simpler, less restrictive, less intensive, or less expensive interventions, or a combination, are tried initially, followed by care based on guidelines for patients who have an inadequate response. Care is guided by the patient's response to treatment and by a schedule for preventive maintenance, not by diagnosis alone. Stepped-care principles provide a framework for organizing and allocating the limited professional resources available for decision support, self-management support, and active follow-up in the care of chronic illnesses.

Stepped care may allow primary care physicians to transcend the gatekeeper role. However, this broader responsibility for coordinating care needs to draw on different members of a treatment team (the patient, the care manager, and the specialist-consultant) as the needs of patients emerge. The primary care team provides continuity and support for patients adapting to the changing demands of chronic illness. The care manager and specialist-consultant provide targeted services to ensure that patients achieve the best possible outcomes. At all levels of stepped care, supporting the patient's role in self-management is essential: the patient is an integral part of the team.

Stepped care draws on the strengths of primary care to care for patients with chronic illnesses without compromising the primary care physician's core responsibilities in both acute and chronic illness care. It emphasizes general capabilities in chronic illness care, such as treatment planning, patient education, active follow up, and outcomes monitoring. As primary care becomes better organized to provide these general care services for patients with chronic illness, the strengths of primary care for managing chronic illness may come to the fore.

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West of the Rockies

Speaker's Corner

Living with thalassemia

Living with a chronic illness has had an extensive impact on my life. Thalassemia has shaped how I live and perceive my life and it is a driving force in shaping my personality. Thalassemia and the physical challenges that accompany this disease have created my intense passion for living and a deep appreciation for health. Each day is a gift to be cherished.

Although I do not remember being diagnosed at 14 months of age, I remember being sick often as a child. Doctors' appointments, medical procedures, and surgeries are a routine part of life. Thalassemia is a high maintenance disease and, like many chronic illnesses, survival is often a fight. Therefore, I have a heightened awareness of my own mortality. I do not fixate on death, but I definitely do not plan far ahead into the future. This is not to say that I do not have a plethora of hopes and dreams.

Thalassemia has made me determined and has given me a strong will. Having a chronic illness has also taught me to be empathetic. I love people and my friends and family are my greatest treasures. My ultimate goal is to be the best person that I can be. I do not know how long I will be on this earth, but my desire is to make a difference in people's lives. Quality of life is more meaningful to me than quantity.

I always strive to live positively with thalassemia, but at times it is frustrating having to deal with a chronic illness that consumes an exorbitant amount of time with transfusions, a nightly desferal regimen, constant doctor's appointments, and various other procedures. If I could choose, I would not erase thalassemia from my life, rather I would change the way illness is managed in our society. The uphill battle for me is not always the medical dimension of the disease, but the bureaucracy that defines the health care system. Insurance is stressful for countless patients. On several occasions, I almost lost my medical insurance and more than once I have been denied coverage due to my pre-existing condition. It was medical insurance, not ill health, that almost prevented me from attending graduate school because my HMO would not offer out-of-state coverage. Unfortunately, insurance companies, not doctors, dictate what procedures can be performed, the length of my stay in the hospital, and what medications can be used. Insurance coverage has also been a financial burden. When I worked as a preschool teacher for 6 months, my insurance payments and medical bills exceeded my income.

One of the most difficult aspects of living with thalassemia is coping with the burden it places on my family and friends. My family is extremely supportive and I believe that my thalassemia has strengthened our family dynamic, but that does not eliminate their worry and stress. Chronic illness can adversely affect the marital relationship as well as the siblings involved. There is a dire need for support services to help manage the stress placed on a family as a result of chronic illness.

With improved technology and medical advances, people with thalassemia are living longer. Therefore, consideration must be given to the new issues, such as fertility and employment, that arise from an extended lifespan. Support services and outreach programs are critical in helping patients cope with these challenges, but programs such as these are often difficult to access. With budget cuts and rising costs in health care, programs either do not exist or must be eliminated.

I hope that in the future more funds will go toward improving the management and treatment of thalassemia. A routine liver biopsy is invasive and painful. A machine has been developed, a ferritometer, that examines liver iron stores painlessly and noninvasively. Clearly, such a machine would dramatically improve patient's quality of life, yet only two ferritometers exist in the world. My hospital would like to acquire the third, but funding is a major challenge.

If I could advise clinicians, I would encourage them to make every effort to human-

ize health care. I respect my doctors and I place much trust in them. Doctors are inundated with a large volume of patients, research, and education, thus making it easy to lose sight of the meaning of medicine—healing. Healing goes beyond prescriptions and procedures. Healing is listening, caring, answering questions, being honest, and treating the patient as a human being. Collaboration among disciplines is especially important with thalassemia because the disease affects so many physiologic systems. The patient and family must be seen as an integral part of the team and children must be encouraged to be proactive in their own care.

I must emphasize the importance of specialized thalassemia centers and centers of excellence for specific diseases in general. Thalassemia centers across the United States are few and extremely difficult to access. Health care is decentralized, due to lack of funding, which is also problematic. Many doctors are not informed about thalassemia and the complexities of the disease. Consequently it is often up to patients to educate them. As the survival rate of patients increases, a benefit of specialized care, it is imperative that we strive for standardized and centralized thalassemia care. A multidisciplinary team approach of experts, working together, can greatly improve the quality of a patient's life.

Despite the challenges I face, I would not change the fact that I have thalassemia, I would only change the bureaucracy that underlies disease in general. I have come in contact with many amazing individuals with thalassemia who have become some of my closest friends. It is difficult to witness others fighting the same battle and it is devastating to lose loved ones to this disease. I will never get over the death of my friends, rather I have integrated the grief into my life. I carry a torch in my heart for them as I try to seize each day and live life to the fullest.

For more information, our website is: www.thalassemia.com

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Om Tat Sat—Peace in the Oneness of Nature

The gist of histories and statistics as far back as the records reach is in you this hour, and myths and tales the same

Walt Whitman
Leaves of Grass

Om Tat Sat

And now at last.
We have toiled from dawn to dawn
To find the answers in medicinal ways,
To find the cures
Through paths of pain
And journey into time's artery

We have wrapped the wounds
And watched them slowly heal,
Re-skin themselves to seal
Gradually
With words and thoughts of comforting
And often dropping to the ground
Like falling fruit
We have picked and preserved
to revive
to turn new leaves
in the serenity and tranquility of grasses yet to come.

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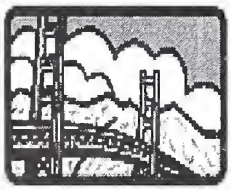

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Brochures and registration forms are available from the contact person or organization sponsoring the program.

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All courses and meetings listed are approved for Cat 1 credit toward the CMA Certificate in CME. To list accredited courses here, please send information at least two months in advance to Paulette Richardson, Continuing Medical Education, California Medical Association, PO Box 7690, San Francisco 94120-7690; or phone (415) 882-3387. For more information on accreditation or certification, please write to the above address.

CARDIOLOGY

MARCH 26-30, 2000: The 16th Annual Cardiovascular Conference at Lake Louise. American College of Cardiology at Lake Louise, Alberta, Canada. 16.5 hrs Cat 1. Contact Registration Secretary, (800) 253-4636 ext 694; Fax (301) 897-9745.

APRIL 14-16, 2000: Coronary Heart Disease Update. Bally's, Las Vegas, NV. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

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FAMILY PRACTICE/PRIMARY CARE

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NEUROLOGY

MARCH 10-12, 2000: Neurology for the Non-Neurologist. MGM Grand, Las Vegas, NV. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

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SURGERY

MARCH 15-18, 2000: American Association of Ambulatory Surgery Centers, 21st Annual Meeting: Medical, Regulatory and Economic Issues Affecting Ambulatory Surgery Centers. Newport Beach Marriott Hotel, Newport Beach, CA. Contact Karen Morgan, (760) 751-8841; Fax (760) 751-8842; karen@amainc.com.

JULY 28-30, 2000: Comprehensive Review Course in Hand Surgery 2000. American Society for Surgery of the Hand at Dallas, TX. 25 hrs Cat 1. Contact ASSH (847) 384-8300, Fax (847) 384-1435; Meetings@hand-surg.org

SEPTEMBER 22-24, 2000: What's New in General Surgery - 22nd Annual Postgraduate Course. UC Davis at Resort at Squaw Creek, Olympic Valley, CA. 13 hrs Cat 1. Contact CME UC Davis, (916) 734-5390; Fax (916) 734-8966; web.ucdmc.ucdavis.edu/edu.

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APRIL 14-15, 2000: Update in Diabetes. USC at Disneyland Pacific Hotel, Anaheim, CA. 12 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

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JUNE 18-22, 2000: Recent Advances in Venous Thrombosis, Pulmonary Embolism and Anticoagulation Therapy: From A to V Leiden. UC Davis at The Mauna Lani Bay Hotel, Kohala Coast, HI. 18 hrs Cat 1. Contact CME UC Davis (916) 734-5390; Fax (916) 734-0188.

JULY 21-23, 2000: Dermatology for the Non-Dermatologist. Tenaya Lodge, Yosemite, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

AUGUST 4-6, 2000: Clinical Endocrinology for Primary Care Physicians. Monterey Plaza, Monterey, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

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Tuesday Noon Conferences–**Various Topics in Medicine.** Lutheran Medical Center, Wheat Ridge. Contact Jean A. Kline, (303) 425-2951.
First Wednesday of Each Month–**Various Topics in Neurology.** Colorado Society of Clinical Neurologists. Contact Colorado Society of Neurologists, (303) 449-3566.
Second Wednesday of Each Month–**Cardiovascular Education Series.** St Anthony Hospital at St Anthony Hospital, Denver. Contact Rose Powell, (303) 629-3678.

MARCH 11-18, 2000: Horizons in Surgery. Beaver Run Resort, Breckenridge, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

MARCH 17-19, 2000: Controversies in Transplantation. Breckenridge, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

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JULY 21-23, 2000: Genetics and Ethics. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

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JULY 28-31, 2000: A Comprehensive Review of Movement Disorders for the Clinical Practitioner, 10th Annual Course. Columbian University College of Physicians and Surgeons at Hotel Jerome, Aspen, CO. Contact Columbia University College of Physicians and Surgeons, (212) 781-5990; Fax (212) 781-6047; cme@columbia.edu; http://cpmcnet.columbia.edu/dept.cme.

AUGUST 2-4, 2000: 26th Psychiatry Conference. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

AUGUST 6-13, 2000: Current Concepts in Adult Orthopedic Surgery. The Peaks, Telluride, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

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IDAHO

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NEW MEXICO

Information, requests for accreditation, and items to be listed should be sent to the chair of the CME Committee, New Mexico Medical Society, 7770 Jefferson, Suite 400, Albuquerque, NM87109, at least two months in advance. For information on CME accreditation or on the CME requirements of the New Mexico Board of Medical Examiners, please write to the above address or call (505) 828-0237.
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MAY 5-6, 2000: Integrative Medicine and the Skin. La Posada de Santa Fe, Santa Fe, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

JUNE 28-30, 2000: Santa Fe Summer Psychiatric Symposium. Hotel Loretto, Santa Fe, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

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MARCH 16-17, 2000: Complementary Medicine. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

MARCH 25, 2000: Genetics for Clinicians. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

APRIL, 2000: Thoracic Surgery. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

APRIL 28, 2000: Diabetes Management. Seattle, WA. Contact Providence General Medical Center (425) 261-3690; Jsackett@Providence.org.

MAY, 2000: Alzheimers Update. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

MAY 18-20, 2000: 4th Annual Cardiac Prevention Conference. Whistler, BC. Contact Providence General Medical Center (425) 261-3690; Jsackett@Providence.org.

JUNE, 2000: Northwest Wilderness Medicine. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

JULY 23-25, 2000: World Class Breast Imaging: Mammography for a New Millenium. Waterfront Centre Hotel. Vancouver, BC. Contact Medical Education Resources (800) 421-3756.

OCTOBER 4, 2000: Adrian E. Flatt Resident and Fellows Conference in Hand Surgery. American Society for Surgery of the Hand at Seattle, WA. Contact ASSH (847) 384-8300; Meetings@hand-surg.org; www.hand-surg.org.

OCTOBER 5, 2000: Carpal Instability, Congenital Hand Differences, or **Cumulative Trauma.** American Society for Surgery of the Hand at Seattle, WA. Contact ASSH (847) 384-8300; Meetings@hand-surg.org; www.hand-surg.org.

OCTOBER 5-7, 2000: 55th Annual Meeting - Overcoming Adversity: Hand Surgeons Shaping the 21st Century of Health Care. American Society for Surgery of the Hand at Seattle, WA. Contact ASSH (847) 384-8300; Meetings@hand-surg.org; www.hand-surg.org.

WYOMING

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AUGUST 4-6, 2000: Issues in Women's Health. Snow King Resort, Jackson Hole, WY. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

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Adolescent medicine comes of age

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Editor's Pick

Teens believe they are invincible, if not immortal. The risks of adult health problems, such as lung cancer, obesity, infertility, and cirrhosis, seem a long way off. We think of teens as healthy, but at least 20% of adolescents have a serious health problem. As Wilkes and Anderson point out on p 77, ill health and death in adolescents are largely caused by injuries, alcohol and drug misuse, depression, unplanned pregnancies, and sexually transmitted infections. Teens only occasionally visit physicians. Wilkes and Anderson argue that teens' visits should be used for psychosocial screening and they discuss the best way to talk to teens based on their experiences at the Venice Family Clinic and the limited research evidence that is available.

Discussing some areas of health among teens arouses strong emotions and generates political attention. The rate of teen pregnancies in the United States is 13 times higher than in the Netherlands and 4 times higher than in Germany. Although the AMA now promotes the distribution of condoms in schools, Kirby (p 49) points out that the evidence that they work any better than programs promoting only abstinence is fairly weak. On p 153 Gottlieb discusses the political fallout from the AMA's new policy, while in an Op-Ed on p 148 Grimes will horrify some politicians with his belief that emergency contraception should be available over the counter. Teens should keep emergency contraception on them, just in case. Grimes argues that a condom breaking or an unprotected act of sex is analogous to a fire breaking out. "If women had to go to the hardware store to buy a fire extinguisher after a fire began, its usefulness would be compromised. The same may hold for emergency contraception." In her evidence-based case review on p 166 Davtyan provides a thorough guide to suitable contraception for teens and suggests that physicians should discuss sexuality and contraception during routine clinical encounters with adolescents. Grube and Gruber (p 210) believe physicians should also discuss the teen's exposure to sexuality in the media. Too often teens see unrealistic portrayals of sex in which no one gets pregnant or catches a sexually transmitted disease. Again, there is not enough research to inform the debate on whether exposure to sex in the media encourages sexual encounters or whether the relation works the other way. But parents should supervise their teen's use of the media and help them critique what they see.

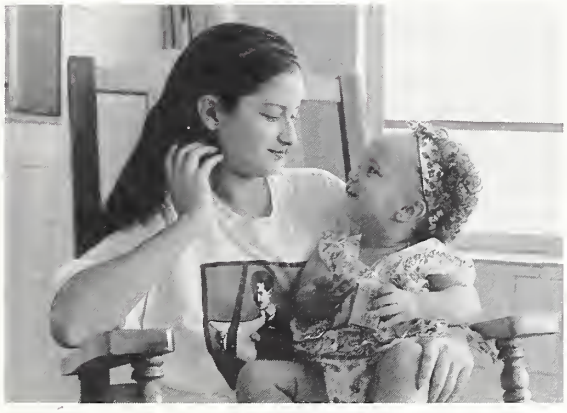
The media has also been blamed for encouraging anorexia. About 2%-3% of young women have a diagnosable eating disorder, warn Brown and colleagues (p 189). Primary care physicians should watch out for unexplained weight loss in adolescents, secondary amenorrhea, excessive exercise, and parental reports that their teen eats slowly and at odd times.

On p 208 the journal starts a new series on myths in medicine, with a strongly worded commentary by Hoffman and King addressing the havoc caused by myths through the centuries. Some myths are still perpetuated in the area of pubertal development, claims Nakamoto on p 182. The isolated development of breasts, even in girls as young as 7, may be early but normal. Nakamoto provides useful reassurance about some of the common misconceptions that can create anxiety in parents and children.

Of all the avoidable causes of morbidity and mortality in teens, violence is particularly tragic. Egger and colleagues point out (p 197) that 4.205 children and adolescents were killed last year by gunfire alone. Many teens live in fear of violence, in homes where they do not feel safe, in communities where they are regularly exposed to violence. Egger and colleagues have developed a mnemonic to help physicians assess the impact of violence on their teenage patients. Although there are no pharmacologic answers to the effects of violence, and psychotherapy may not be available in some areas, longitudinal studies show that one intervention consistently works. Teens who have a relationship with an interested and caring adult seem to be protected from the adverse effects of being exposed to violence.

The world of adolescents through a lens . . . .

WJM is pleased to include in this issue the work of high school students who attend Crossroads School in Santa Monica, California. Their photography teacher is Zelda Zinn. Other images in this special issue were provided by S Beth Atkin, from her book entitled *Voices from the Streets. Young former gang members fell their stones*, published in 1996 by Little, Brown Co.



S Beth Atkin

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Op-Ed

Emergency contraceptives over the counter

Allowing easy access is important

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Requiring an adolescent to consult a clinician before obtaining emergency hormonal contraception is analogous to mandating that she consults a fire station before buying a fire extinguisher for her home. Why does she need supervision to buy several innocuous pills at the drug store when none is necessary to buy pressurized cylinders of chemicals at the hardware store? This double standard in prevention services hurts women, especially adolescents, for whom gaining access to care may often be difficult.

The rate of pregnancy among adolescents is declining across the United States.[1] Nevertheless, it is still higher than in other industrialized nations. Coitus among adolescents is often unanticipated and unprotected. Hence, the easy availability of emergency contraception is important.

Two emergency regimens of hormonal contraception are available in the United States. Both regimens are approved for use up to 72 hours after unprotected coitus. The first to be approved by the Food and Drug Administration was the Yuzpe regimen, which consists of an initial dose of two combination oral contraceptives (0.5 mg levonorgestrel plus 100 µg ethinyl estradiol), followed 12 hours later by two more. The second regimen to be approved was levonorgestrel alone: one 0.75 mg tablet followed 12 hours later by another. In a randomized controlled trial the levonorgestrel regimen prevented about 85% of the pregnancies that would have otherwise occurred in contrast with the Yuzpe regimen which prevented 57%.[2] The levonorgestrel regimen was also much less likely to cause nausea.

Given this impressive efficacy, why is emergency contraception used so infrequently in the United States? Only 1% of women who might have benefited from emergency contraception in the United States have ever used it.[3] In settings as diverse as Scotland and Hong Kong, adolescents know more about emergency contraception and use it more frequently.[4] The reasons for this disparity are complex but two issues are important: a lack of information and lack of access.[5] Public service campaigns and pharmaceutical advertisements are beginning to address the lack of information.[6] Allowing easier access to emergency contraception may not lead directly to greater use, but barriers to access are a hindrance.

In addition, an innovative experiment in Washington state that allows pharmacists to provide emergency contraception[7] is popular with patients, pharmacists, and physicians. We should now go a step further and eliminate the requirement for the pharmacist as well. For example, the levonorgestrel regimen recently became available over the counter in France (http://www.opr.princeton.edu/ec/cnfrance.htmr).[8]

There are four questions that need to be addressed in considering whether a drug should only be available by prescription: is the condition for which the drug is to be used difficult to diagnose, does the dose need to be tailored to the patient's needs or the virulence of the disease, are the risks and benefits of the treatment finely balanced, and is the drug dangerous (from an overdose or from its potential for addition).[9]

First, in considering emergency regimens of hormonal contraception, no learned intermediary is needed to diagnose a torn condom. Second, the dose is the same for all women with either regimen. Third, rather than being finely tuned, the risk-benefit equation for emergency contraception is weighted heavily in favor of benefit. Although side effects such as nausea and vomiting are common (especially with the Yuzpe regimen), no serious adverse events have been linked to its use, and the benefit of avoiding an unintended pregnancy is a strong argument for providing liberal access. The only contraindication to the use of emergency contraception is an existing pregnancy, although there is no evidence that emergency contraception harms a fetus.[10] Fourth, emergency contraception is safe. The regimens are packaged as single doses, reducing the possibility of an accidental overdose. However, should a woman intentionally take an overdose, vomiting would be the most serious consequence.

Our aim as clinicians should be to maximize the effectiveness of our interventions: for emergency contraception, sooner means better. The longer a woman waits before starting emergency contraception, the less well it works.[11] Requests for emergency contraception often arise on weekends when offices are closed.[5] The costs associated with a visit to a physician or clinic may be prohibitive. Many other factors may deter young women from seeking prescriptions: embarrassment, fear of discovery of sexual activity, and the inability to take time off from school. If emergency contraception were available over the counter in drug stores that are open evenings and weekends, many of these obstacles would be removed.

Like fire extinguishers, emergency contraception may be most useful if stored where the need may arise.[12] This may mean it will be stored in a medicine cabinet, purse, or the glove compartment of a car. A trial in Scotland showed that providing emergency contraception to women in advance does not undermine their ongoing use of their current method.[13] Similarly, keeping a fire extinguisher in the kitchen is unlikely to lead to risky cooking practices. If

women had to go to the hardware store to buy a fire extinguisher after a fire began, its usefulness would be compromised. The same may hold for emergency contraception.[11]

Most of the popular medicines sold over the counter in the United States were initially available only by prescription.[9] The transition from being available only by prescription to over the counter sales is a natural evolution for many medicines (for example, cimetidine, miconazole, and ibuprofen).

Critics of deregulation inevitably cite the importance of counseling. Yet what evidence is there that offering counseling with emergency contraception improves outcomes for women? The availability of emergency contraception over the counter could supplement rather than replace the current distribution of other contraceptives.

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Making condoms available in schools

The evidence is not conclusive

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There are three main controversial approaches to reducing rates of sexually transmitted diseases and unintended pregnancy among North American teenagers: abstinence-only programs, safer sex education, and making condoms available in schools. Which of these is effective? The American Medical Association (AMA) Council on Scientific Affairs recently concluded that "there are no published studies that measure behavioral effects of the 'abstinence-only' curricula," that "evaluations of safer-sex sexuality education show inconsistent but promising results," and that programs that make condoms available in schools "usually demonstrate increased condom use."[1]

United States Representative Tom Coburn attacked that conclusion, claiming that the distribution of school condoms conflicts with "common sense" and increases condom use but does not necessarily lead to lower rates of either pregnancy or sexually transmitted diseases. The implementation of abstinence education in schools, he maintained, was followed by lower rates of teen pregnancies out of wedlock.[2]

The AMA report is a carefully conducted and thoughtful review of the evaluations of all these programs. However, some abstinence-only programs may delay sex; there is strong evidence that some safer sex programs reduce unprotected sex; and the evidence that the availability of condoms increases their use is not strong.

In regard to abstinence-only programs, the AMA Council on Scientific Affairs correctly states that many youths are sexually experienced and need the knowledge, motivation, skills, and access to condoms and contraceptives to avoid sexually transmitted diseases and unintended pregnancies. It finds no good evidence that any abstinence-only programs actually delay the onset of sexual intercourse. All of these facts support the position that abstinence-only programs should not be widely implemented in schools in place of programs that cover both abstinence and contraception.

On the other hand, in fairness to abstinence-only programs, only one study has rigorously evaluated an abstinence-only program.[3] That study, conducted in California, was designed to detect small changes in delay in the onset of sexual intercourse; it randomly assigned 7,753 youths in middle school to either treatment or control conditions and tracked them for 17 months. It found no significant difference in the initiation of sex or other sexual behaviors.

It is unfair to judge the results of the diverse range of abstinence-only programs on this one study. Some of these programs, especially those that are more comprehensive and those with qualities found in effective safer sex programs, may delay the onset of intercourse, and rigorous research should be completed to find out which are effective. Until then, we should remain cautious about broadly replicating any programs that have not been shown to be effective.

While Coburn's claim that the emergence of abstinence education in recent years "coincides with the first recorded reduction in sexual activity and out-of-wedlock pregnancy among adolescents" is supported by some survey data, the decrease in pregnancy is also due in small part to a stabilization or fall in the percentage of youths who are sexually active and in large part to an increase in the use of contraception among those who are sexually active. These trends support the position that programs covering both abstinence and contraception should be broadly implemented.

Most safer sex programs do cover both abstinence and the use of condoms, and some address other forms of contraception. The AMA review properly notes that some studies of safer sex programs show positive effects on behavior—such as delaying sex, reducing the frequency of sex, and increasing the use of condoms—whereas other studies have not found such effects. However, the evidence for some safer sex programs is a little stronger than that presented by the AMA review. After all, several studies showing positive effects on behavior for a year or more were well designed with random assignment, large sample sizes (up to 3,600 students) and long-term measures of behavior (up to 31 months). One safer sex program has been independently evaluated in several schools in California and Arkansas and was found to be effective in both studies.[4,5] Furthermore, the curricula found to be effective at changing behavior have common characteristics that are thought to contribute to their success.

Both the AMA report and Coburn state that making condoms available in schools leads to greater condom use, but the evidence is not consistent. Only four studies of programs making condoms available in schools have been published.[6-9] Only one of these studies evaluated the effects of making condoms available in several schools, collected baseline and follow-up data, had a comparison group, and had large sample sizes (7,179 students in 10 intervention schools and 16,296 students in comparison schools in Seattle, Washington).[6] That study found that students did take a large number of condoms from the schools when condoms were made available without any restrictions in open baskets in school health centers. However, that study also found that condom use among youths who were sexually experienced did not increase; it decreased. Students simply took condoms from the schools' health centers instead of from other sources. To understand the decline in condom use, the authors conducted focus groups with groups of students and examined schoolwide survey data. They found that even before condoms were made available in the schools, condoms were available from other sources in the community. The reasons youths gave for not using condoms did not typically include lack of access.

Of the three other published studies, two found significant increases in condom use,[7,8] and the third found nonsignificant trends in that direction.[9] Each of these three studies, however, was limited by one or more of the following methodologic problems: lack of baseline data, lack of comparison groups, insufficient sample sizes, or changes in parental consent procedures resulting in serious attrition at follow-up. In addition, two of these studies measured the effects of broader, more comprehensive programs directed at preventing human immunodeficiency virus infection or health promotion programs,[7,8] not solely the availability of condoms in schools.

Three possible conclusions can be made from these studies of making condoms available in schools. First, the differences in results could be due to differences in the research methods. These studies would provide only weak evidence that making condoms available in schools increases their use, because the strongest study failed to find such an effect.

Second, the differences could be caused by differences in the communities and in student needs. If communities do not provide condoms in convenient and confidential locations, then their availability at school may increase their use, whereas if communities already make them available, then adding school availability may not increase their use. Before making condoms available, schools should assess whether doing so would meet a real need.

Third, in two of the studies, the differences in study results could be due to other factors (for example, educational components). This suggests that schools should determine why youths have sex without condoms. If students have little motivation to avoid having sex or to use condoms, or if they lack the skills to refuse sexual advances, insist on condom use, or use condoms properly, then effective programs to promote safer sex should be implemented. If unsafe sex is part of a larger pattern of substance misuse, poor school performance, family dysfunction, and community disorganization—as it often is—then these causes also need to be addressed.

Schools should also consider the costs of making condoms available. The financial costs are small, but the social or political costs may be large. For religious or moral reasons, some people may strongly oppose making condoms available in schools, and both their beliefs and the community conflicts that might ensue should be properly considered.

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Adolescent injury prevention and clinicians: time for instant messaging

Physicians can help to reduce pointless and early deaths

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Slightly more than 50% of all deaths among children between the ages of 1 to 14 years and almost 75% of deaths among youths aged between 15 and 24 years are not caused by disease. They are caused by injuries, which include unintentional injuries (the term preferred to accidents which implies randomness and fatalism), suicides, and homicides. In fact, many strategies to prevent injury are more effective than many medical interventions.[1,2] Because rates of acute and chronic diseases are low in this age group, injuries are unmasked as the clear preventable cause of death that physicians must face. Family physicians, pediatricians, and internists can all play a role to introduce these strategies to patients during clinical encounters.

What can primary care physicians who care for adolescents do to prevent injuries among their patients? Systematic reviews show there have been few randomized controlled trials to determine if counseling by physicians can improve practices to prevent injury among adolescents or their parents.[3,4] There is evidence, however, that physicians can improve parental practices with smaller children, so the lack of evidence should not be taken as a signal to retreat. Clinicians use anticipatory guidance to persuade children, adolescents, and parents to change behavior and to adopt behaviors to promote health. The same principles apply toward injury control. Often, counseling with regard to injury prevention involves promotion of the use of a piece of technology (for example, the use of seat belts, helmets, and smoke detectors).

Physicians should screen adolescents for problems re-

Ways to reduce risk of death among adolescents	Reduction in risk of death
Motor vehicle passengers	
Wear three-point restraints properly	47%
Always use lap belt if your car has automatic seat belts	58% (with seat belt)
Choose a car with an airbag, if possible	20% (without seat belt)
Do not ride with an intoxicated driver	>90%
Teen drivers	
Avoid driving at night for first year	>50%
Avoid driving with >1 passenger	Unknown
Cyclists	
Wear a helmet	85% (bicycle) 55% (motorcycle)
Boaters	
Do not drink alcohol while boating	>90%
Wear a personal flotation device while boating in open water	Unknown

lated to alcohol use and to refer them for treatment if any problems are detected.[5,6] Recent evidence suggests that early intervention after trauma incidents involving alcohol misuse can reduce the risk of injury recurrence by about 50%.[7] Brief interventions include giving facts and feedback about a behavior, clearly recommending a change in behavior, presenting options to achieve this change, checking and responding to the reaction of the adolescent, and providing follow-up care.[8,9]

Parents of teens have an important role to play in reducing the risk of road injuries in their children. They should try to provide vehicles for their children to drive that protect occupants well during crash (see http://www.hwysafety.org/vehicle_ratings/ratings.htm for crash ratings), and restrict their teen's exposure to night driving, especially with other adolescent passengers.

Any parent who owns firearms should restrict their access by locking them in secured storage or placing them in a combination gun safe. It is recommended to avoid keyed devices because adolescents know where to find keys. Parents should strongly consider removing firearms from the home if any member is a substance misuser or has a mental illness.

How effective these measure are in reducing the risk of death among adolescents is largely unknown. Some evidence shows, however, that the use of smoke alarms can reduce the risk of death by between 50% and 70%.[10] One smoke alarm should be placed on each floor of the home, and the alarm should be connected to the electrical circuit or powered by long lasting lithium batteries, if possible. Other key measures to prevent injury are outlined below (see box), along with their risk reduction of death.

Adolescence is a developmental period characterized by behavior that involves taking risks. Some of this behavior is associated with a misperception of the risks associated with certain activities. Physicians can help by providing accurate information to both adolescents and their parents about the magnitude of risk reduction afforded by key measures designed to prevent injury.

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Netphiles

http://www.chebucto.ns.ca/Health/TeenHealth/SexOrien/gay.html provides answers to many questions that young people may have about their sexual orientation. The web site was developed as a result of the Teen Health Project in Canada by students from Dalhousie Medical School, who used material from their tutorials to meet the health needs of local teenagers. The site offers comprehensive information using simple, nonprejudicial, and sensitive language. By explaining, for example, that sexual orientation is determined by the "sex or sexes you are romantically, physically, emotionally, and sexually attracted to," the information is suitable for a young person who is unsure of their sexual identity. Visitors to the site learn that feelings of isolation or guilt are common, but depression, low self-esteem, and suicidal thoughts indicate a need to seek professional help. Also, there is useful advice on how to come out to your family, how to meet other gay and lesbian teenagers, and how to find a support group in your area.

Amina Hussain, medical student

We welcome suggestions for Web sites to be included in future Netphiles

In the Public Eye

News and Features

AMA criticized for calling for condoms in schools

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A report by the AMA advocating the distribution of condoms in schools and downplaying the value of providing education on abstinence only programs is drawing the ire of political leaders and physicians. They argue that the policy is irresponsible social meddling and is politically motivated.

"This report shows the degree to which the AMA is being held hostage to political and philosophical ideology at the expense of sound science and the health interests of Americans," said Dr John Diggs, spokesman for the Consortium of State Physician Resource Councils, a group of 14 state organizations representing more than 2,000 American physicians. "The AMA's report contains no new data and simply parrots the same line the condom industry has been spouting for years."

At issue is the long-running debate of what should be emphasized as part of sex education for teens, the role of abstinence-only programs—especially for those who have not yet become sexually active, and the role of programs promoting safer sex for those already having sex.

The AMA's policy, approved without fanfare, has begun to circulate, and some doctors, including Representative Tom Coburn, a Republican from Oklahoma, have criticized it as "politically correct" and medically irresponsible. For its part, the AMA has defended the policy as prudent and based on science.

"I think we're on the side of angels on this," says Dr John C Nelson, a member of the AMA's Board of Trustees. Dr Nelson argues that the US Surgeon General, David Satcher, also supports the policy, as do groups such as the Association of Reproductive Health Professionals.

The AMA's new policy was developed last December at the group's annual meeting of its House of Delegates, which was held in San Diego, California. At the meeting, the group's Council on Scientific Affairs pre-

AP Photo/Bob Child

Middle school students are encouraged to postpone sexual involvement

sented a revised policy on sexuality education, abstinence, and the distribution of condoms.

According to the text of the policy, the group concluded that, based on scientific studies including a recent one in *JAMA*, safer-sex programs can be effective in helping teens postpone the onset of sexual intercourse. The policy states that programs to distribute condoms in schools help increase condom use without hastening the onset of sexual activity; it also states that abstinence-only programs are of "very limited value" and require rigorous evaluation "before they can be supported as changing students' risky sexual behavior."

The new policy requires that several sections of the AMA's existing policy be scrapped. As a result, the AMA will no longer say that it supports efforts to "make abstinent sexual behavior more socially acceptable." It also no longer says that it supports public health education that teaches teens that "premarital sexual abstinence is an effective means of avoiding unwanted pregnancy and other health risks."

The new policy has drawn particularly strong criticism from Dr Coburn, one of the few practicing physicians in Congress and a member of the AMA who has worked with the group on other issues. Dr Coburn accused the AMA of breaking with "common sense" and "sound medical principle."

"We would not be satisfied with promoting filter cigarettes to reduce lung disease, nor would we urge drunk drivers to be sure to wear seat belts," the Republican congressman wrote in a letter to the AMA's president, Dr Thomas R Reardon. Dr Coburn has made the promotion of abstinence education and the prevention of sexually transmitted infections a hallmark of his five years in Congress.

"I am extremely disappointed in the AMA," says Dr Coburn. "The AMA promotes the best medical advice in every other area of public health except sexuality," he says. "But when it comes to sex, we don't have the courage, as an institution, to give the best medical advice, which is to be sexually abstinent—until you're in a married, monogamous relationship—due to the prevalence of sexually transmitted diseases."

The AMA believes that the jury is still out on abstinence-only approaches, and its report points out that most programs on adolescent sexuality already include a strong message encouraging abstinence along with other features. "Clearly, little evidence is available to support the effectiveness of an abstinence-only approach in delaying the onset of intercourse among adolescents," the AMA report concludes. It cites one study which indicated that many abstinence-only programs have not been evaluated.

Amid the recent flurry of criticism, other groups are beginning to step forward to defend the AMA's statement, including James Wagoner, president for Advocates for Youth. "Ignorance is nobody's ally in the era of AIDS," Mr Wagoner said. "What politicians need to realize is that denying young people critical information about contraception is not only naive and short-sighted, but irresponsible and dangerous."

Dr John C Nelson, an AMA trustee, said that the group's policy is responsible. "We don't have the right to legislate morality," he said. "We're trying to make a policy that fits everybody. We're saying that families should teach sex education at home—that's the best place to teach it. If it's not done there, then the fallback is the school. But whatever we teach, let's have some science behind it. If we're faulted for that, I don't know how to respond."

Bayer made to tone down aspirin advertisements

Deborah Josefson, San Francisco

The pharmaceutical company, Bayer, has agreed to mute its advertisements, which propagate the idea that daily use of aspirin is beneficial for all adults. The agreement comes after the US Federal Trade Commission and the US Department of Justice charged that Bayer's aggressive aspirin marketing campaigns are misleading and may lead to medical complications in uneducated consumers. In particular, officials were concerned that Bayer made unsubstantiated claims that regular intake of aspirin could prevent myocardial infarcts and ischemic strokes in healthy adults.

While there is substantial evidence that aspirin is beneficial for patients with coronary artery disease and occlusive vascular disorders, little evidence exists that healthy people can be protected from cardiovascular disease or strokes by taking aspirin regularly. As well as the risk of aspirin causing hemorrhagic complications, such as bleeding ulcers and hemorrhagic strokes, it can worsen renal failure and hypertension as well as aggravate asthma in some patients. Aspirin and nonsteroidal anti-inflammatory drugs have been implicated in an estimated 16,500 deaths annually.

Under the settlement, Bayer will spend an estimated $1 million in a public education campaign that will warn consumers of aspirin risks. The Federal Trade Commission is requiring Bayer to distribute educational brochures on the matter, which will be available as reprints in doctors' offices and in full page print advertisements in major magazines.

The campaign, which started in February, will run through March. Brochures can be ordered by calling 1-800 332-2253.

In addition, all advertisements trumpeting aspirin's cardioprotective effects must carry the following disclaimer: "Aspirin is not appropriate for everyone, so be sure to ask your doctor before you begin an aspirin regimen." The advertisements will also state that "for healthy people without any symptoms of heart disease, the risks of aspirin therapy may outweigh the benefits."

In a statement, a Bayer spokesperson said that the company had always encouraged patients to seek a physician's advice before starting to take aspirin and that the dispute with the Federal Trade Commission revolved around how strongly this point was emphasized. The dispute was on matters of degree and not substance, the spokesperson added.

Claude Lenfant, director of the National Heart, Lung and Blood Institute, applauded the agreement: "The educational campaign will help clear up possible confusion about the proper use of aspirin in the prevention of heart disease and stroke," he said.

The settlement must be approved by the US District Court in New Jersey, where the US headquarters of Bayer are located. In a related matter, Bayer will pay $30,000 to each of the states of New York and Connecticut to settle similar claims.

Med.Pix

The science and art of treating acne in adolescence

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QUESTIONS: A 16-year-old adolescent boy is in the office for a physical examination before participating in a sports program. He would also like his acne treated (see figure 1). What type of acne does this patient have and how would you approach his treatment?

A 14-year-old boy is in the office for acne treatment (see figure 2). He reports having used an over-the-counter preparation containing benzyl peroxide without any success. What type of acne does this patient have and what agents would you use to treat his acne?

Figure 1

Figure 2

ANSWERS: It is important to classify the types of lesion in order to choose the most effective therapy.

The 16-year-old boy has comedonal or obstructive acne (figure 1). Open and closed comedones are visible but there is no evidence of inflammatory lesions. The pathophysiologic mechanism here is the obstruction of the sebaceous follicle by increased turnover and cohesiveness of the cells that line the follicle. The most effective treatment involves using comedolytic agents, such as retinoid or azelaic acid (see box), which can reduce the increased turnover and cohesiveness of the follicular epithelium and stop acne production.

Explain to the adolescent that this treatment will not work overnight and, in fact, the acne may worsen for 2 weeks before it gets better. If the patient understands this explanation and trusts in the care provided, he may succeed in getting the long-term benefits of the topical retinoid (tretinoin [Retin-A] or adapalene [Differin]). If use of a single agent does not lead to a good response, coupling the use of a retinoid with benzoyl peroxide or with azelaic acid can have a synergistic effect.

The 14-year-old boy has inflammatory acne (figure 2). In addition to comedones, he also has papules, pustules, and nodules. These lesions are produced by the proliferation of *Propionibacterium acnes*, which produces free fatty acids that irritate the distended follicular wall. The follicle wall is disrupted and the extrusion of *Propionibacterium acnes,* hair, and cells into the dermis induces the inflammatory response and leads to the development of inflammatory lesions.

Effective treatment requires killing the *Propionibacterium acnes* microorganisms as well as reducing the com-

edonal obstructions. This boy's acne is moderately severe and has not responded to a single topical agent. Therefore, it is reasonable to prescribe an oral antibiotic to reduce the overgrowth of *Propionibacterium acnes*. Oral antibiotics for acne include tetracycline, doxycycline, minocycline, and erythromycin. Benzamycin, a topical gel that contains benzoyl peroxide and erythromycin, was prescribed. When this therapy did not work adequately, a topical retinoid was added to his treatment regimen. If these medications do not produce adequate results within 6 months, the patient may be a candidate for isotretinoin (Accutane) therapy.

A 17-year-old girl who is using a topical retinoid in the evening and taking doxycycline orally in the morning to treat acne has erythema across her cheeks from a day at the beach (figure 3). Increased sun sensitivity is a common reaction to both doxycycline and topical retinoids. Because adolescents often spend time in the sun and may not use protective sunscreens and clothing, it is essential to discuss this reaction and be prepared to modify their therapy if needed.

Other therapeutic options available for this adolescent include changing the oral antibiotic to erythromycin or minocycline, which are not associated with sun sensitivity, or changing the topical medication to Benzamycin. Because the patient's underlying acne is inflammatory, it needs to be treated with some maintenance medication that is bacteriocidal. Another treatment option is the birth control pill; it is useful for adolescent girls that are sexually active and have acne. The birth control pill can improve acne by reducing sebum production (see p 166).

The overall goals of acne treatment are to: lessen the physical discomfort from inflamed lesions, improve the adolescent's appearance, prevent scarring, and avoid the adverse psychological impact of acne (low self-esteem, loss of self-confidence, social isolation, and depression).[1] Successful management of acne has its roots in patient education and the promotion of compliance. It is helpful to explain the pathogenesis of acne and the rationale behind its treatment so adolescents can feel like active participants in their care.

Acne therapy by severity*

Obstructive or comedonal acne - mild

- Tretinoin or adapalene (Retin-A or Differin) azelaic acid (Azelex)
- Benzoyl peroxide
- No place for oral antibiotics

Mild papulopustular acne

- Topical antibiotics and benzoyl peroxide (Benzamycin)
- May add oral antibiotics if topical agents are not effective
- Tretinoin or adapalene (Retin-A or Differin)
- Azelaic acid (Azelex)

Moderate papulopustular acne

- May start with topical antibiotic, benzoyl peroxide, and oral antibiotic
- Oral antibiotics are often essential at this stage
- Tretinoin or adapalene (Retin-A or Differin)
- Consider stopping oral antibiotics when topical agents are working well
- Consider birth control pills in females
- Consider isotretinoin (Accutane), if other therapies are not working in 6 months

Severe nodular or nodulocystic or scarring acne

- May try combinations of agents above
- Isotretinoin (Accutane)

Adapted from Usatine R, Quan M, Strick R. Acne—a treatment update. *Hospital Pract 1998;* February 15:111-127

Figure 3

Reference

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Original Research

Effects of an educational intervention for general practitioners in adolescent health care principles: a randomized controlled study

ABSTRACT **Objective** To evaluate the effectiveness of an educational intervention in adolescent health designed for general practitioners, in accordance with evidence-based practice in continuing medical education. **Design** Randomized, controlled trial with baseline testing and 7- and 13-month follow-ups. **Setting** The intervention was delivered in local community settings to general practitioners in metropolitan Melbourne, Australia. **Participants** A total of 108 self-selected general practitioners. **Intervention** A multifaceted educational program (2.5 hours per week for 6 weeks) in the principles of adolescent health care, followed 6 weeks later by a 2-hour session of case discussion and debriefing. **Outcome measures** Objective ratings of videotaped consultations with standardized adolescent patients and self-completion questionnaires were used to measure general practitioners' knowledge, skill, and self-perceived competency; satisfaction with the program; and self-reported change in practice. **Results** 103 of 108 physicians (95%) completed all phases of the intervention and evaluation protocol. The intervention group showed significantly greater improvements than the control group in all outcomes at the 7-month follow-up (all subjects $P<0.03$), except for the standardized patients' rating of rapport and satisfaction ($P=0.12$). 104 participants (96%) found the program appropriate and relevant. At the 13-month follow-up, most improvements were sustained, the standardized patients' rating of confidentiality fell slightly, and the objective assessment of competence further improved. 106 physicians (98%) reported a change in practice attributable to the intervention. **Conclusions** General practitioners were willing to complete continuing medical education in adolescent health and its evaluation. The design of the intervention, using evidence-based educational strategies, proved effective and expeditious in achieving sustainable and large improvements in knowledge, skill, and self-perceived competency.

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The patterns of health need in youth have changed markedly in the past three decades. Studies in the United Kingdom, North America, and Australia have shown that young people experience barriers to accessing health services.[1-5] With the rise in rates of a range of youth health problems such as depression, eating disorders, drug and alcohol use, unplanned pregnancy, chronic illness, and suicide, it is clear that the accessibility and quality of health services to youth need to improve.[3,6]

General practitioners provide the most accessible primary health care for adolescents in the Australian health care system.[7] Yet, in a survey of 1,000 general practitioners in the state of Victoria, Veit and associates found that 80% reported inadequate undergraduate training in consultation skills and psychosocial diseases, and 87% wanted continuing medical education in these areas.[4,8] These findings agreed with those of comparable studies.[9-11]

Evidence-based strategies in helping physicians to learn and change their practice are at the forefront of continuing medical education design.[12-14] In response to the identified gap in training, an evidence-based educational intervention was designed to improve the knowledge, skill, and self-perceived competency of general practitioners in adolescent health. We report the results of a randomized controlled trial evaluating the intervention, with follow-up at 7 and 13 months after the baseline assessment.

Summary points

- Firm evidence exists that the lack of confidence, knowledge, and skills of general practitioners in adolescent health contributes to barriers in delivering health care to young people
- Evidence-based strategies in continuing medical education were used in the design of a training program to address the needs of general practitioners and young people
- Most interested general practitioners attended and completed the 6-week, 15-hour training program and the evaluation protocol covering 13 months
- General practitioners completing the training made substantial gains in knowledge, clinical skill, and self-perceived competency compared with the randomly allocated control group of practitioners
- These gains were sustained at 12 months and were further improved in the objective measure of clinical competence in conducting a psychosocial interview

PARTICIPANTS AND METHODS

The Divisions of General Practice are Australian regional organizations that survey needs and educate general practitioners in their zone. Metropolitan Melbourne has 15 divisions. Advertisements inviting participation in the intervention and evaluation were placed in 14 of the 15 divisional and state college newsletters and mailed individually to all division members. The course was free, and continuing medical education points were available. Respondents were sent intervention details and the evaluation protocol and asked to return a signed consent form. Divisions and physicians were excluded if they had previously received a course in adolescent health care from this institution.

Goals, content, and instructional design of the intervention in adolescent health care principles for general practitioners

Intervention goals

- Improve knowledge, skill, and attitudes in the generic concepts of adolescent health in order to effectively gain rapport with young people, screen them for health risk, provide health promotion and appropriate management plans
- Increase awareness of the barriers to access their practices may pose for adolescents and how these may be overcome
- Understand how other services can contribute to the management of young people and how to access these in their location

Intervention content (weekly topics)

- Understanding of adolescent development, concerns and current morbidities, the nature of general practice and yourself
- Locating other youth health services and understanding how they work
- Medicolegal and ethical issues in dealing with minors
- Communication/consultation skills and health risk screening
- Depression and suicide risk assessment
- Eating disorders (detection and initial management)

Instructional design

- Needs analysis
  - From previous surveys and informally at start of workshops
- Primary educational strategy
  - Workshops (2.5 hours weekly for 6 weeks)
    - Debriefing from previous session
    - Brief didactic overviews
    - Group problem-based activities and discussion
    - Modeling of interview skills by opinion leaders on instructional video
    - Role-play and feedback practice sessions with adolescent actors
    - Activities set to practice in intervening week
    - Individual feedback on precourse evaluation video
  - Course book
    - Goals, objectives, course requirements and notes
    - Suggested further reading
    - Class or home activities with rationale for each
  - Resource book
    - Reading material expanding on workshop sessions
- Practice reinforcing and enabling strategies
  - Adolescent assessment chart for patient audit
  - Log book for reflection on experience with the patients audited
  - Self-assembled list of adolescent health services in local community
  - Availability of tutor (LS) by phone for professional support between workshops
  - Refresher session for group discussion of experiences in practice (6 weeks after course)

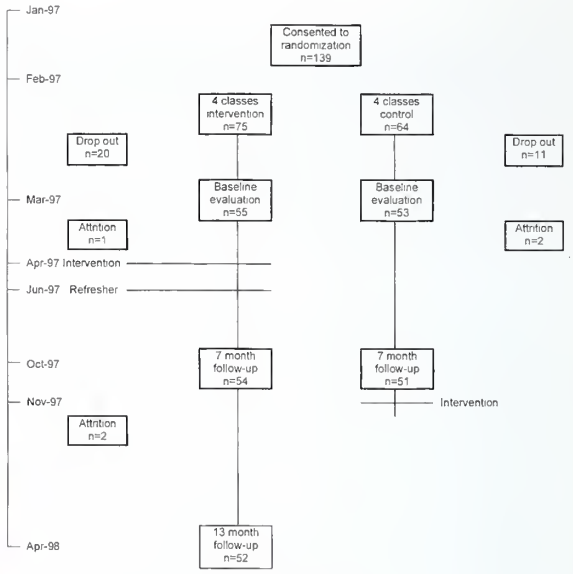

Figure 1 Recruitment and protocol timelines

RANDOMIZATION

Consenting physicians were grouped into eight geographic clusters by practice location to minimize contamination and to maximize the efficiency of intervention delivery. Clusters (classes) of similar size were randomly allocated to an intervention or control group by an independent researcher.

SAMPLE SIZE

Sample size estimation was based on the minimum desirable change in knowledge score. Seventy-four participants were required to detect an effect size difference of 0.67 in a simple random sample, with a power of 80% and a significance level of 95%. This figure was inflated to 148 to allow for randomization by cluster (ρ=0.05) and 20% attrition.

INTERVENTION

The objectives, content, and instructional design of the multifaceted intervention are detailed in the box. A panel consisting of young people, general practitioners, college education and quality assurance staff, adolescent health experts, and a state youth and family government officer participated in the design.[15] The curriculum included evidence-based primary and secondary educational strategies, such as role playing with feedback, modeling practice with opinion leaders, and using checklists.[12,16]

The intervention and evaluation protocols are shown in the figure. The 6-week program was delivered concurrently by one of us (LAS), starting 1 month after baseline testing.

MEASURES

The instruments used in the evaluation are summarized in table 1. Parallel strategies of objective and self-reported ratings of knowledge, skill, and competency were used to ensure that findings were consistent.[17,18] Participants' satisfaction with the course and their self-reported change in practice were evaluated at 13 months. Any other training or education obtained in adolescent health or related areas was noted.

Clinical skills

Seven female drama students were trained to simulate a depressed 15-year-old girl exhibiting health risk behavior. Case details and performances were standardized according to published protocols[19-21] and varied for each testing period. Physicians were given 30 minutes to interview the patient in a consulting room at this institution. An unattended camera videotaped the consultation.

The standardized patients were trained in the use of a validated rating chart[21] to assess, first, their own rapport and satisfaction and, second, a discussion about confidentiality. They completed these evaluations after the interview while still in role. They were blind to the intervention status of the physicians, and no physician had the same patient for successive interviews.

Two independent observers, blind to participants' status, assessed the taped consultations in the three testing periods. A physician in adolescent health care coded three items in the scale that related to medical decision making. A trained nonmedical researcher assessed all other items. The chart was developed from two validated instruments for assessing adolescent health consultations[21] and general practice consultations.[22,23] Marks for competency and content of the health risk assessment were summarized into a percentage score. The same observers were used in all three testing periods.

Self-perceived competency

Two questionnaires were developed for the physicians to rate their comfort and their knowledge or skill with process issues, including the clinical approach to adolescents and their families, and substantive issues of depression, suicide risk assessment, alcohol and drug issues, eating disorders, sexual history taking, and sexual abuse. In addition, physicians rated their consultation with the standardized patient on a validated chart,[21] itemizing their self-perceived knowledge and skill.

Knowledge

Knowledge was assessed with short answer and multiple choice items developed to reflect the workshop topics. The items were pretested and refined for contextual and content validity. The course tutor, blind to group status, awarded a summary score.

Table 1 *Evaluation measures, their content, inter item reliability and intraclass correlation within randomization groups estimated at baseline*

Evaluation measures	Content*	Crohnbach α	Intraclass correlation
Skills			
Patients' rating			
Satisfaction and rapport	7	0.95	0.01
Confidentiality discussion	1	C	0.07
Observer's rating			
Competency†	13	0.95	0.05
Content of risk assessment†	22 items	C	0.09
Self-perceived competency			
Comfort			
Clinical process	11	0.88	<0.01
Substantive issues	10	0.93	0.01
Self-perceived knowledge and skill			
Clinical process	11	0.90	0.04
Substantive issues	10	0.94	0.05
General practitioner's self-score on interview	6	0.93	<0.01
Knowledge			
Self-completion knowledge test	41 items	C	<0.01

*Likert scales unless stated otherwise
†Assessments from viewing taped consultations

ANALYSIS

Statistical analysis was performed using a commercial software package (STATA; Stata Corporation, College Station, TX), with the individual as the unit of analysis. Factor analysis with varimax rotation was used to identify two domains within the comfort and self-perceived knowledge or skill items: process and substantive issues. The internal consistency for all scales was estimated using the Cronbach α. Reproducibility within and between raters and the intraclass correlation of baseline scores within each teaching group were estimated using one-way analyses of variance.

The effect of this intervention was evaluated by the regression of gain scores (7-month score minus baseline) on the intervention status, with an adjustment made for baseline and potential confounding variables. Robust standard errors were used to allow for randomization by cluster. The sustainability of outcome changes in the intervention group between the 7- and 13-month assessments was evaluated using paired t tests.

RESULTS

Participants

Newsletters and mailed advertisements to 2,415 general practitioners resulted in 264 expressions of interest; 139 physicians gave written consent to be randomly assigned to either an intervention group or a control group. Attrition following notification of the study status left 55 (73%) in the intervention group and 53 (83%) in the

Table 2 *Demographic characteristics of general practitioners by intervention group*

Characteristic	Intervention group (n = 54)	Control group (n = 51)
Male	24* (44)	28* *(55)
Age (years)		
25–34	13 (24)	10 (20)
35–44	20 (37)	16 (31)
45–54	18 (33)	15 (29)
55+	3 (6)	10 (20)
Language other than English spoken	14 (26)	24 (47)
Average hours consulting/week		
<20	17 (31)	20 (20)
20–40	29 (54)	22 (44)
40–60	8 (15)	18 (36)
Patient seen in an average week		
<50	14 (26)	9 (18)
51–100	16 (28)	13 (26)
101–150	18 (33)	16 (32)
>150	7 (13)	12 (24)
% of adolescents of total patients seen per week		
<10	24 (45)	21 (41)
10–30	22 (40)	23 (43)
>30	8 (15)	8 (16)
Age (years) of oldest child		
No children	3 (6)	9 (18)
≤10	19 (35)	12 (24)
11–20	21 (39)	10 (20)
≥20	11 (20)	19 (38)
Vocational registration	51 (94)	46 (90)
College exams taken	25 (46)	15 (29)
Previous training in adolescent health	15 (28)	15 (29)
Type of practice		
Solo	4 (7)	13 (25)
Group	43 (80)	24 (47)
Community health center	0	4 (8)
Extended hour	0	2 (4)
Other	7 (13)	8 (16)
Appointments/hour		
≤4	32 (59)	33 (65)
5–6	9 (17)	4 (8)
≥6	8 (15)	8 (16)
Other booking systems	5 (9)	6 (12)

*Numbers shown are percentages

control group, with an average of 13.5 (range: 12-15) physicians in each class.

The age and country of graduation of the physicians in this study were similar to those of the national general practitioner workforce.[24,25] Female physicians were over-represented (50% in this study vs 19% and 33% in other reports).[25,26] Table 2 describes the randomized groups. There was imbalance in age, sex, languages other than English spoken, average weekly hours of consulting, types of practice, and college examinations.

Compliance

Of 54 physicians in the intervention group, 44 attended all six tutorials, 8 missed one, and 2 missed three. One practitioner abandoned the course and the evaluation protocol. Of the 108 participants at baseline, 103 (95%) completed the entire evaluation protocol (figure).

Measures

The evaluation scales showed satisfactory internal consistency and low association with class membership (table 1). Satisfactory inter-rater agreement was achieved on the competency scale (n=70; ρ=0.70). The intrarater consistency for both medical and nonmedical raters was also satisfactory (n=20; ρ=0.80 and 0.91, respectively).

Effect of the intervention

Table 3 describes baseline measures and the effect of the intervention at the 7-month follow-up. All analyses were adjusted for age, sex, language other than English, average weekly hours of consulting, practice type, and college examinations. Physicians reporting education in related areas during follow-up (67% of the control group and 41% of the intervention group) were characterized. The difference analysis was adjusted for this extraneous training and baseline score, although the extraneous training did not affect any outcomes. The study groups were similar in all measures at baseline. The intervention group showed significantly greater improvement than the control group at the 7-month follow-up in all outcomes, except in the rapport rating by the standardized patients.

Program satisfaction

The contextual validity and applicability of the course were assessed by 48 of 53 physicians and rated positively by 46 physicians (96%).

13-Month follow-up of the intervention group

The intervention effect was sustained in most measures and further improved in the independent raters' assessment of competence (table 4). The crude standardized patients' rating of the confidentiality discussion deteriorated at the 13-month assessment but was significantly greater than at baseline. Of the 52 participants remaining in the 13-month follow-up, 51 (98%) reported a change in practice, which they attributed to the intervention.

Table 3 *Multiple regression analyses of baseline and difference in scores on continuous outcome measures evaluating success of an educational intervention at 7-month follow-up**

Scores	Not†	Baseline Mean (95% CI)	Difference at 7 month follow-up Mean (95% CI)	Effect size	P value
Skills					
Standardized patients' rapport and satisfaction					
Control	50	67.9 (61.4 to 74.5)	−0.5 (−6.1 to 5.0)	−0.02	0.12
Intervention	54	67.9 (64.9 to 70.9)	6.0 (2.6 to 9.5)	0.54	
Standardized patients' confidentiality					
Control	50	35.2 (29.3 to 41.1)	4.0 (−10.3 to 18.3)	0.19	<0.01
Intervention	54	42.2 (31.0 to 53.4)	53.5 (49.3 to 57.8)	1.28	
Observer competence					
Control	50	51.8 (45.9 to 57.6)	2.6 (−3.0 to 8.1)	0.12	0.01
Intervention	54	48.8 (46.2 to 51.4)	15.3 (11.1 to 19.5)	1.55	
Observer risk assessment					
Control	50	53.3 (49.4 to 57.2)	0.5 (−3.0 to 4.1)	0.04	0.03
Intervention	53	50.7 (44.2 to 57.2)	9.9 (5.8 to 14.0)	0.41	
Self-perceived competency					
Comfort (process)					
Control	49	71.1 (66.4 to 75.8)	0.2 (−3.5 to 4.0)	0.01	0.03
Intervention	54	71.8 (69.7 to 73.9)	7.1 (4.7 to 9.4)	0.89	
Comfort (substantive)					
Control	50	58.1 (52.3 to 63.9)	0.3 (−5.1 to 5.6)	0.01	<0.01
Intervention	54	60.5 (56.1 to 64.8)	15.8 (13.8 to 17.8)	0.97	
Knowledge and skill (process)					
Control	50	65.9 (60.4 to 71.5)	0.7 (−4.0 to 5.3)	0.03	<0.01
Intervention	53	66.3 (63.6 to 69.1)	15.6 (12.1 to 19.2)	1.54	
Knowledge and skill (substantive)					
Control	50	52.1 (44.5 to 59.7)	2.8 (−2.0 to 7.6)	0.10	<0.01
Intervention	54	57.5 (53.8 to 61.2)	20.6 (18.2 to 22.9)	1.50	
Doctors' self rating on taped consultation					
Control	49	56.6 (52.7 to 60.5)	3.1 (0.6 to 5.6)	0.22	<0.01
Intervention	54	56.9 (55.7 to 58.1)	17.8 (15.9 to 19.7)	4.01	
Knowledge test					
Control	49	33.3 (31.6 to 35.0)	3.1 (0.6 to 5.6)	0.51	<0.01
Intervention	54	32.8 (31.6 to 34.0)	14.6 (13.0 to 16.2)	3.31	

*Models include gender, age group, language other than English, type of practice, average hours worked per week, and college exams taken. Difference scores are also adjusted for baseline score and training obtained from elsewhere over 7-month period. Robust standard errors allowed for cluster randomization. All scores out of 100.
†Variation due to missing values in the rating forms of some participants

Table 4 *Change in unadjusted percentage scores for the intervention group (n = 54)**

Scores	Baseline	Follow-up 7-months	Follow-up 13-months	P value†	P value‡
Skills					
Standardized patients' rapport and satisfaction	68.6 (63.5 to 73.7)	76.0 (71.7 to 80.2)	75.9 (71.4 to 80.5)	<0.01	1.00
Standardized patients' confidentiality	42.5 (34.4 to 50.6)	92.7 (89.1 to 96.3)	84.4 (78.4 to 90.5)	<0.01	0.01
Observer competence	51.0 (46.3 to 55.8)	65.3 (60.3 to 70.3)	70.7 (66.3 to 75.0)	<0.01	0.02
Observer risk assessment	51.2 (47.9 to 54.5)	61.3 (58.4 to 64.3)	61.4 (58.3 to 64.4)	<0.01	1.00
Self-perceived competency					
Comfort					
Process	71.3 (67.8 to 74.8)	78.1 (74.8 to 81.5)	80.0 (77.3 to 82.7)	<0.01	0.12
Substantive	59.6 (55.4 to 63.9)	74.9 (71.7 to 78.0)	75.5 (72.4 to 78.7)	<0.01	0.58
Self-perceived knowledge and skill					
Process	66.6 (63.4 to 69.7)	80.8 (78.1 to 83.5)	81.9 (79.2 to 84.6)	<0.01	0.27
Substantive	56.7 (52.8 to 60.6)	76.3 (73.2 to 79.5)	76.3 (73.0 to 79.6)	<0.01	0.99
General practitioner self-rating on taped consultation	55.6 (50.6 to 60.6)	72.1 (68.7 to 75.6)	71.0 (67.3 to 74.7)	<0.01	0.59
Knowledge test	33.5 (31.5 to 35.4)	48.0 (46.1 to 49.9)	47.7 (45.8 to 49.6)	<0.01	0.71

*From baseline to 7 month follow-up and from 7–13 month follow-up using paired *t* test. Values are mean (95% CI) unless stated otherwise
†Baseline to 13 months
‡7 to 13 months

DISCUSSION

A six-session course in adolescent health, designed with evidence-based strategies in physician education, brought substantial gains in knowledge, skills, and self-perceived competency of the intervention group of general practitioners compared with the control group, except for the standardized patients' rating on rapport and satisfaction. The changes were generally sustained over 12 months and further improved in the independent observers' rating of competence. Almost all participants reported a change in actual practice since the intervention.

These results are better than those reported in a review of 99 randomized controlled trials (published from 1974-1995)[12] to evaluate continuing medical education. Although more than 60% had positive outcomes, they were small to moderate and usually occurred in only one or two outcome measures. In keeping with the recommendations of this review, we adopted a rigorous design, a clearly defined target group, and several methods of evaluating competence. Perhaps more importantly, the intervention design incorporated three further elements: the use of evidence-based educational strategies, a comprehensive preliminary analysis of needs, and assurance of the content validity of the curriculum by involving young people and general practitioners.

The study participants clearly represented a highly motivated group of practitioners. This self-selection bias was unavoidable but reflected the reality that only interested physicians would seek special skills in this domain. This aspect also conforms to the adult learning principle of providing education where a self-perceived need and a desire for training exist.[12,26,27] We have, therefore, established that the intervention is effective with motivated practitioners.

Physicians with an interest in a topic are generally thought to have high levels of knowledge and skill, with little room for improvement. This was not the case in the present study. Baseline measures were often low, and improvements were large, confirming the need for professional development in adolescent health care. The retention rate was excellent, possibly due in part to the role of a general practitioner in the program design, recruitment, and tutoring.

The question remains whether improved competency in a controlled test setting translates to improved performance in clinical practice.[28] High competency ratings are not necessarily associated with high performance, but low competency is usually associated with low performance.[16,29,30]

The standardized patients' rating of rapport and satisfaction with the physician was the only outcome measure apparently unresponsive to the intervention. Actors' ratings and character portrayal were standardized and sex bias controlled for by using only female actors. Even with these precautions, three actors scored differently from the rest, one had fewer encounters with physicians, and the subjective nature of the rating scale probably contributed to large individual variation. A trend toward improvement in the intervention group was noted, but our study lacked sufficient power to find a difference. In other settings, validity and reliability in competency assessments with standardized patients have been shown to increase with the number of consultations examined.[31,32] Pragmatically, it was not feasible to measure multiple consultations in this study.

Inter-rater measurement error was minimized by using the same raters through all three periods of testing. The independent observer and patient were blind to study status but may have recognized the intervention group at the 7-month follow-up because of the learned consultation styles. Other measures of competency were included to accommodate this unavoidable source of error.

This study shows the potential of general practitioners to respond to the changing health needs of youth following brief training, based on a needs analysis and best evidence-based educational practice. Further study should address the extent to which these changes in physicians' competence translate to health gains for their young patients.

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COMMENTARY

Educational interventions can change clinical behavior

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During the past decade, medical education at the undergraduate level and, to a lesser extent, the postgraduate level has seen major reform. A key change has been the incorporation of problem- and case-based learning, both of which revolve around basic tenets of theory about how adults learn. Unfortunately for society, continuing medical education has not progressed much past the traditional lecture format that, on occasion, is followed by examinations. Often, even when given, these examinations may or may not be corrected. In this manner, continuing medical education is a one-size-fits-all exercise that is geared to a lecturer's assessment of learners' needs. Rarely are learners asked to assess their own knowledge, skills, or attitudes to help direct their learning. Similarly, the context of continuing medical education is rarely geared toward helping busy clinicians develop new ways to deal with real-life practice dilemmas or to assess their practice behaviors.

The article by Sanci and associates addressed two areas of great importance to primary care physicians. First, the authors designed a clear, interactive, and innovative program of continuing medical education based on the assessed needs of primary care physicians. The program was broken into bite-sized morsels, each of which focused on a different objective. Second, the authors took a content area, adolescent medicine, and attempted to provide primary care physicians with the skills, knowledge, and attitudes to better address this population that is underrepresented in the health care arena. Rather than assess short-term knowledge acquisition (multiple choice or true-false questions given at the end of the program), the authors relied on a systematic, nonbiased review of videotapes of clinicians (controls and intervention group) interacting with simulated adolescent patients (standardized patients).

Although the design was a rigorous randomized control trial, given the logistics of education research, the study design had some weaknesses—small sample size, variability in standardized patients, a potentially nonrepresentative group of clinicians, and lack of a pretest that would have allowed an initial comparison between the control and intervention groups. Despite these problems, the report is a welcome addition to the areas of both continuing medical education and adolescent medicine. Educators and medical leaders should take notice, for the approach used in this study is easily extrapolated to other content areas and groups of physicians.

The critical objective is to assess whether an educational intervention can be acceptable to physicians and result in long-term change in clinical behavior. In this study, both were possible.

The SCOFF questionnaire: a new screening tool for eating disorders

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Eating disorders are among the most common psychiatric disorders in young women. Early detection and treatment improve the prognosis, but the presentation of eating disorders is often cryptic—for example, via physical symptoms in primary care. The ability to diagnose the condition varies and can be inadequate,[1] and existing questionnaires for detection[2,3] are lengthy and may require specialist interpretation. No simple, memorable screening instruments are available for nonspecialists. In alcohol misuse, the CAGE questionnaire (questions about Cutting down, Annoyance with criticism, Guilty feelings, and Eye-openers)[4] has proved popular with clinicians because of its simplicity. We developed and tested a similar tool for eating disorders, with questions designed to raise the suspicion that an eating disorder might exist before rigorous clinical assessment.

PARTICIPANTS, METHODS, AND RESULTS

We developed five questions addressing core features of anorexia nervosa and bulimia nervosa, using focus groups of patients with eating disorders and specialists in eating disorders. We tested the questions in a feasibility study of patients and staff at an eating disorders unit. None of these participants was involved in the subsequent study. We created the acronym SCOFF from the questions (see box).

We recruited patients sequentially from referrals to a specialist clinic: 116 women aged 18 to 40 years who were confirmed as having either anorexia nervosa (n=68 [35 binge eaters, and 33 restricted their food intake]) or bulimia (n=48), according to the criteria specified in the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition.[5] For controls, we recruited 96 women (through advertising at local colleges), aged 18 to 39 years, who were confirmed not to have an eating disorder. Patients and controls were asked the SCOFF questions orally; they also completed the eating disorder inventory[3] and the Bulimic Investigatory Test, Edinburgh (BITE), a self-rating scale for bulimia.[2]

No significant differences existed between patients and controls for age or ethnicity. As expected, more patients than controls were in the highest socioeconomic groups ($P<0.001$; $\chi^2_3=47.4$), and patients were more likely to be single, separated, or divorced ($P<0.001$; $\chi^2_1=13.0$). The mean length of illness for patients was 8 years (SD, 4.8; range, 1-25 years). The mean (SD) body mass index (weight [kg]/[height (m)]^2) for controls, patients with bulima, and patients with anorexia was 22.3 (1.9), 24.4 (1.8), and 15.1 (0.8), respectively. All scores on the eating disorder inventory and the BITE scale were consistent with published data for women with or without eating disorders.[2,3]

The SCOFF questions*

Do you make yourself **S**ick because you feel uncomfortably full?

Do you worry that you have lost **C**ontrol over how much you eat?

Have you recently lost more than **O**ne stone (14 lb) in a 3-month period?

Do you believe yourself to be **F**at when others say you are too thin?

Would you say that **F**ood dominates your life?

*Each "yes" equals 1 point; a score of 2 indicates a likely diagnosis of anorexia nervosa or bulimia

All participants found the questions and the term "SCOFF" acceptable. Setting the threshold at two or more yes answers to all five questions provided 100% sensitivity for anorexia and bulimia, separately and combined (all patients: 95% confidence interval, 96.9%-100.0%; patients with bulimia: 92.6%-100.0%; and patients with anorexia: 94.7%-100.0%), with a specificity of 87.5% (79.2%-93.4%) for controls (table)

COMMENT

The SCOFF questionnaire seems highly effective as a screening instrument for detecting eating disorders. It is simple, memorable, easily applied and scored, and has been designed to suggest a likely case rather than to diagnose.

We consider that the SCOFF questionnaire performed well against the 10 questions suggested by Greenhalgh to assess screening tests.[6] The false-positive rate of 12.5% is an acceptable trade-off for high sensitivity.

Further work is needed to establish validity and reliability in a wider population, particularly in those in the general population who are at risk for eating disorders. Nonetheless, the evidence of validity is sufficient for it to

*Numbers of cases (true positives) and controls (true negatives) identified by SCOFF questionnaire as likely to have an eating disorder**

Cases	Total no. of subjects	No of participants identified by SCOFF as likely to have eating disorder
All cases	116	116
Bulimic cases	48	48
Anorectic cases:	68	68
Bingeing	35	35
Restricting	33	33
Controls	96	12

*If participants gave positive responses to at least two of the five questions (see box)

be used routinely in all patients considered at risk for eating disorders.

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COMMENTARY

A promising instrument, but more research is needed

One strength of the SCOFF questionnaire is its simplicity and ease of use. The instrument can be administered and scored in a matter of minutes. Further, it seems to need no specialized training or qualifications to use. Preliminary diagnostic results from the SCOFF questionnaire are impressive. The SCOFF questionnaire was able to correctly identify 100% of participants with eating disorders (both anorexia nervosa and bulimia nervosa) and correctly rule out 87.5% of controls who did not have eating disorders. The sample size, although not impressive, was sufficient to provide meaningful conclusions in the present sample.

It is unclear from the article how the diagnoses of eating disorders and the absence of eating disorders in controls were established. The use of a structured diagnostic interview such as the Structured Clinical Interview from the *Diagnostic and Statistical Manual of Mental Disorders* (SCID) to confirm or rule out eating disorder diagnoses would clearly strengthen the study.

It is also unclear that Americans will correctly interpret "make you really sick" in the first question ("make yourself sick" may be clearer), and the use of "one stone" will be meaningless (about 6.3 kg, or 14 lb). Also, some will find the term "SCOFF" unpleasant at best.

The sample is limited in several respects. First, all cases presumably met full diagnostic criteria for anorexia nervosa or bulimia nervosa. It is, therefore, unclear how participants who were subthreshold for these conditions would score on the SCOFF questionnaire. Further, the ratio of patients with eating disorders to those without eating disorders in the present study—roughly 1.2:1—is not representative of that found in the general population. Although this should not influence estimates of sensitivity and specificity (because each is calculated within cases and controls, respectively), it would artificially inflate estimates of positive predictive power—that is, what percentage of those testing positively actually have an eating disorder. Another concern with the present sample is that all of the patients had previously been diagnosed as having an eating disorder. This may have artificially inflated the sensitivity of the instrument because these participants may have been more willing to answer yes to items on the SCOFF questionnaire than those with eating disorders who had not been previously diagnosed.

No data are presented on the reliability of the SCOFF questionnaire. Because the proposed scoring assumes equivalence of items (that all items have equal weight), it would be important to examine the internal consistency of the items (for example, the Cronbach alpha). Test-retest reliability coefficients would also be informative. Further, if the SCOFF questionnaire is intended to be administered in interview form (as it was in the present study), interrater reliability may also be relevant. It would have been informative if data had been presented on responses to individual SCOFF items by diagnostic group. Also, the authors should consider presenting a receiver operating characteristic curve showing sensitivity and specificity across a range of cutoff scores.

One issue that is likely to be raised with respect to the SCOFF questionnaire—but that is by no means specific to the instrument—is the relatively low base rate of eating disorders (anorexia nervosa, 0.5%, and bulimia nervosa, 1%-2% in the age groups at risk) in the general population. As a result, the SCOFF questionnaire is likely to produce a relatively large number of false-positive cases (respondents who test positively on the instrument but do not have a diagnosis of an eating disorder). Whether this false-positive rate is a matter of concern can only be evaluated by the relative costs, financial and otherwise, of classification errors in the specific situation in which the SCOFF questionnaire is used. Costs to be considered (including those to patients) should include those associated with administration, with following up a patient who is falsely positive, and with missing a patient who has the disease. Different situations may have different costs associated with these errors. These costs may dictate whether the instrument should be used at all, or whether alternative cutoff points should be used to better balance the relative costs of misclassification.

This study represents the first logical step in the psychometric development of the SCOFF questionnaire. Although the preliminary results are impressive, further development is clearly needed.

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Best Practice

EVIDENCE-BASED CASE REVIEW

Contraception for adolescents

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Objectives

- Discuss the impact of teen pregnancy on the individual and on society and the importance of preventing pregnancy in teens
- Recognize that adolescents have different contraceptive needs than adults and that contraceptive efficacy and compliance are also different
- Explore the importance of preventing sexually transmitted diseases while preventing teen pregnancy
- Understand that contraceptive counseling is an important component of primary care for adolescents and that paying special attention to confidentiality is essential
- Review contraceptive methods that are more likely to be used by adolescents and discuss alternatives

The rate of births among adolescents in the United States is four times higher than in western Europe, accounting for 13% of all births in the United States.[1,2] Between 1985 and 1990 the cost to the public of teenage childbearing was $120 billion.[3] The age-specific levels of sexual activity are similar to those of teenagers in other countries, raising the question of whether contraception is being underused in the United States. Most teenage mothers (83%) come from poor or low-income families as do most of the teenagers who have abortions (61%); however, 38% of all adolescents come from poor or low-income families. Having a child as a teenager triggers poverty in 28% of teenage mothers by the time they are in their 20s and 30s compared with only 7% of women of comparable age who give birth after adolescence.[4] There are 12 million adolescent girls in the United States. Each year, almost 1 million of them become pregnant—that is, 1 in 5 of all sexually active teenage girls.[4] More than 50% of these girls give birth, and 30% have an abortion. [4] Almost 80% of these pregnancies are unplanned, and more that half of them occur in 18 and 19 year olds.[4] About 25% of teenage mothers will have a second child within 2 years of their first.[4]

Only 29.8% of sexually active girls and women aged 15 to 19 use contraception, and many of them use it inconsistently.[5] More adolescents are using contraception at the time of first intercourse, mainly because of the increasing use of condoms: 76% of teenage girls and 72 % of teenage boys used condoms in 1997 compared with 64% and 62% in 1988, respectively.[5]

The use of contraception by adolescents is cost effective regardless of the method used. Current levels of contraceptive use averted an estimated 1.65 million pregnancies in teenage women aged between 15 and 19 years in 1995.[6] The cost of each averted pregnancy minus the cost of the contraceptive method represents measurable cost savings. In private medical practice, savings range from a low of $1,794 for the use of spermicides at 1 year of use to a high of $12,318 for levonorgestrel implants at 5 years; in the public sector, savings range from a low of $779 for spermicides at 1 year of use to a high of $5,420 for levonorgestrel implants at 5 years.[7] If insurance covered the cost of contraception for adolescents part of the problem of teenage pregnancies would be solved but even adolescents with insurance face barriers to accessing contraceptive services, one of which is confidentiality. The Association of Reproductive Health Professionals has a confidential adolescent reproductive health questionnaire, which can be a helpful tool for healthcare providers.

Abstinence can be presented as an alternative. About half of adolescents aged 15 to 19 abstain from intercourse. By ages 20 and 24, about 12% continue to abstain.[8] Studies show that fewer than 20% of all parents discuss sexuality with their children but the adolescent children of those who do are more likely to abstain.[9] A combined approach to discussing sexuality, which included family, school, and the media could be successful in increasing the number of teenagers who abstain from intercourse. The role of the community is critical in promoting abstinence because it can provide teens with hope for the future that they may not want to risk and alternative, supervised activities. Many school districts provide abstinence education but, interestingly, 23% of all school districts in the

Summary points

- Oral contraception is the contraceptive most commonly used by adolescents but their compliance and continuation rates are poor
- Encouraging teens to use condoms with a hormonal method can reduce the risk of sexually transmitted diseases
- A confidential and concrete approach to contraceptive counseling is likely to be effective in increasing the use of and compliance with methods of birth control
- Counseling about the side effects of different contraceptives is essential; adolescents who are familiar with the potential problems are more likely to be willing to manage them rather than stop using the contraceptive
- Emergency contraception should be discussed whenever contraceptive methods are discussed

United States teach teens that abstinence is the only option available and forbid dissemination of any positive information about other contraceptive options.[10]

METHODS

MEDLINE entries (1980-1999) were searched using terms including "adolescent," "contraception," "teenagers," and "birth control." The search retrieved review articles, editorials, and clinical studies published in English. The information obtained was used to design the case study presented to illustrate the important aspects of providing contraception to adolescents in primary care. Part of the content of the case is real, derived from the author's practice.

Brenda W is 16 years old and has been sexually active for the past 6 months with her boyfriend. She has been using condoms since the first time she had intercourse but the condom broke last time, one day before her office visit. She is concerned that she is pregnant and would like to use a back-up method in case a condom breaks again in the future.

Do adolescents have specific contraceptive needs?

Brenda W, like many other adolescents, is seeking contraceptive advice only months after becoming sexually active.[4] Misconceptions about the risks of contraceptive methods, fear of the pelvic exam, and concerns about confidentiality keep many teenagers from seeking advice from their physicians.[11] Better communication with adolescents—within families, at school, and within the medical system—can help them overcome these barriers. Clinicians usually don't bring up the issues of sexually transmitted diseases and contraception but these are subjects that most teens would like to discuss with their providers.[12] Teenagers will discuss their sexuality and contraceptive needs with their physician if they know that these discussions are confidential.[13] The Mature Minor Doctrine legally protects physicians who provide diagnosis and treatment of sexually transmitted diseases, contraception, pregnancy testing, and counseling for substance misuse, and mental health services.[14] In 1980, about 20% of family planning clinics required parental consent for patients aged 15 or younger even though 23% of teens using the clinics reported that they would not attend if their parents were notified.[15] In 1991, 30% of senior high school students did not use family planning clinics because they feared parental discovery.[13] Four of 10 teenagers who need contraceptive services request them from family planning clinics supported by federal Title X funding, which allows the clinics to provide contraception to anyone without regard to age or marital status.[16] In September 1997, though, the US House of Representatives only narrowly rejected a rule which would have made it mandatory to notify parents if their minor children attended clinics receiving Title X funds. Such clinics would have had to notify a parent at least 5 days before providing contraception to a minor. The rule was replaced by the decision that clinics should encourage but not insist on parental involvement. Also, since 1997, 30 states have required parental consent for teenagers to obtain abortions (up from 18 states in 1991). As a result of the legislation encouraging parental involvement in the provision of contraceptive services to minors, many teenagers are reluctant to seek birth control because the laws leave the decision about whether parents should be informed to the discretion of the physician, who must consider the best interests of the minor.

Because of the high incidence of sexually transmitted diseases among teens, prevention of these illnesses should be discussed together with contraception. Many clinicians advocate a belt and suspenders approach of using condoms as well as a hormonal method in order to minimize the risk both of an unwanted pregnancy and sexually transmitted diseases.

Are condoms used by adolescents and are they as effective as in adults?

Data from the 1995 National Survey of Family Growth showed that 37% of teenagers aged 15 to 19 used condoms for contraception.[17] Condoms are the second most commonly used contraceptive in this age group.[17] Condom failure is usually caused by breakage (up to 6.7% of failures) and slippage (up to 6.4%). Polyurethane condoms and the female condom are more likely to fail than latex condoms.[18] Condoms are more likely to fail among adolescent users (16.5% failure rate at 1 year of use by those aged 15 to 19 compared with a 14% failure rate among people aged 15 and 44)[7] mainly because of incorrect and inconsistent use.[19] The primary care provider who counsels adolescents about condom use should explain how and when to place the condom, how and when to remove it, and how to safely carry one in a purse.

The use of condoms tripled among adolescents in the 1980s, mainly prompted by the fear of AIDS. Still, many adolescents find condoms embarrassing to buy or obtain from clinics and may not use one for each act of coitus. The major advantage of condoms as a choice of contraception is that they protect against sexually transmitted

diseases and, indirectly, protect against infertility and cervical cancer.[18]

What can be done to prevent pregnancy in Brenda W's case 24 hours after a condom failure?

Emergency contraception is a good option. Previously known as the "morning after pill," it is effective up to 72 hours after unprotected intercourse; it works by interfering with ovulation, fertilization, and implantation.[20] It is a primary method of pregnancy prevention, since pregnancy begins with implantation and emergency contraception has no effect on an implanted egg. The Yuzpe regimen is most commonly used and consists of two doses of 100 µg ethinyl estradiol and 0.5 mg levonorgestrel administered 12 hours apart. In place of levonorgestrel, 1.0 mg doses of norgestrel can be used. There is an emergency contraception kit (Preven, Gynetics, Somerville, NJ) available by prescription that contains the two hormonal doses (two pills each) as well as a pregnancy test and information about the method and its side effects. A variety of oral contraceptives can also be used for emergency contraception (box).

This method is at least 75% effective in preventing pregnancy, and pregnancy rates fall from 8% to 2% when it is used.[21] The sooner the treatment is administered, the more efficacious it is, and this is a strong argument for providing prescriptions in advance. A regimen with similar efficacy is levonorgestrel alone administered in two doses of 0.75 mg each at 12-hour intervals. The insertion of an intrauterine device within 5 days after unprotected intercourse is another method. Mifepristone is 100% effective as emergency contraception but is not available in the United States.

Many patients and providers are not aware of emergency contraception, which limits its use. Only 36% of respondents in a study were aware that anything "could be done" within a few days of to prevent pregnancy, 55% "had heard" of emergency contraception but only 1% had used it.[22] A study of inner-city adolescents found that only 25% "had heard" of emergency contraception.[23] A survey of providers of contraceptive care to adolescents found that only 20% prescribed this method more than once a month and only one quarter discussed it during routine visits.[24] Another study of providers of reproductive health care found that more than 90% never or rarely spoke to their patients about emergency contraception, and about half of them had prescribed it over the past year.[25] There is a nationwide hotline (1 888 NOT 2 LATE) that provides advice on emergency contraception and a website dedicated to emergency contraception (http://opr.princeton.edu/ec/), and providers should offer these resources to adolescent patients during contraceptive counseling.

The side effects of emergency hormonal contraception are nausea, vomiting, and irregular bleeding. The patient should be counseled to take an antiemetic 1 hour before taking the hormones and to have a urine pregnancy test if she does not menstruate within three weeks of using the emergency contraception. The provider can use the opportunity of this visit to counsel Brenda about other contraceptive options that prevent pregnancy when condoms fail.

After being counseled about long-term contraceptive options, Brenda W decides to try the birth control pill. She thinks that she can take the pill every day but is worried about gaining weight and has heard that the pill could cause cancer of the female reproductive organs and infertility. Also, she would like to try a preparation that would clear her acne and reduce her menstrual cramps. She specifically wants to try the pill that she saw advertised on television which was described as the best in terms of treating acne.

Oral contraceptives are the most common method of contraception used by adolescents, 44% of sexually active teenagers aged between 15 and 19 years use them.[17] The typical failure rate for the pill in adults is about 5%; in adolescents it is 10% to 15% at 1 year of use[26, 27] or higher, mainly due to inconsistent use.[28] About half of all teenagers who start taking oral contraceptives stop within 1 year.[29] The higher failure rate and lower continuation rate in adolescents compared with adults should prompt clinicians to provide appropriate counseling and discuss alternative methods as well. For example, a proactive approach of making a telephone call or scheduling a follow-up visit can help reinforce the need to take the pills each day and help manage the adolescent's side effects. It is important for the adolescent to know in advance what she plans to do with the pill pack if she is concerned about

Options for emergency contraception

Type of pill	Dose
Preven	Two doses of two blue pills
Ovral	Two doses of two white pills
LoOvral	Two doses of four white pills
Levora	Two doses of four white pills
Levlen	Two doses of four light orange pills
Nordette	Two doses of four light orange pills
TriLevlen	Two doses of four yellow pills
Triphasil	Two doses of four yellow pills
Trivora	Two doses of four pink pills
Alesse	Two doses of five pink pills
Levlite	Two doses of five pink pills
Ovrette	Two doses of 20 yellow pills (levonorgestrel only)

confidentiality and privacy and the provider can help with suggestions.

Adolescents are concerned with their body image, so Brenda W's worry that she might gain weight on the pill should be addressed by her physician. There is no significant evidence that oral contraceptives cause weight gain, and this is a good opportunity to counsel her about the benefits of a healthy diet and regular exercise.[30] Long-term use of the pill does not increase the risk of ovarian and uterine cancer. Taking the pill for 4 years decreases the risk of ovarian cancer by 30% and taking it for 12 years decreases the risk by 80%. Taking oral contraceptives for 4 or more years decreases the risk of uterine cancer by 60%.[31] The use of oral hormonal contraception does not alter fertility, although pregnancy might be delayed for several months after discontinuing this method.[32] Using oral contraception generally improves acne. The third generation progestins (desogestrel, norgestimate, gestodene) are less androgenic and may offer more benefits.[33] The triphasic ethinyl estradiol and norgestimate combination is the only preparation that is approved by the US Food and Drug Administration for treating acne but many other contraceptives have the same beneficial effect, including those with higher doses of estrogen. After explaining to Brenda that all contraceptives are effective in treating acne, she insists that she wants to try the one that was advertised on television because her friend recommends it. The media and peer pressure are powerful influences on adolescent behavior.

Most women notice an improvement in menstrual cramps while taking any birth control pill. The beneficial effects of oral contraceptives outside of their contraceptive component should be presented to the teenager as this can often increase motivation to take the pill and to continue taking it regularly. Some of the noncontraceptive benefits are presented in the box.

The side effects and disadvantages associated with the use of oral contraceptives should also be specifically discussed. The adolescent who takes birth control pills should be able to recognize and report problems. Some of the disadvantages are presented in the box.

Brenda W decides to take triphasic ethinyl estradiol and norgestimate partly because she really wants her acne to go away. You advise her to return in 3 months or to call if she develops any side effects. After about a month, you get a call. She reports that she wants to stop the pills because she is persistently nauseous and is experiencing breast tenderness and mood changes.

What is the natural history of these side effects?

Nausea, breast tenderness, and irregular bleeding are self-limiting and tend to improve or disappear within three cycles of pill use. Brenda should be reassured and advised to take the pill at night with a meal to minimize the nausea. If the nausea persists, her pill could be changed to a lower dose pill (20 µg ethinyl estradiol) but she should be cautioned about the risk of increased menstrual abnormalities, such as breakthrough bleeding, while on the low-dose estrogen pill.

Mood changes in this patient should not be attributed automatically to the pill, other causes such as stress, changes in relationships, environment, or substance misuse should be ruled out. If other causes are not an issue, mood changes may be controlled by changing the proges-

Noncontraceptive benefits of using oral contraceptives

Menstrual	Less bleeding (and indirectly less anemia) and less dysmenorrhea Fewer symptoms of premenstrual syndrome Predictable menses
Cancer prevention	Ovarian cancer Uterine cancer
Decreased risk of	Ovarian cysts Benign breast disease Ectopic pregnancy
Improvement in or protection against	Acne Hirsutism Osteoporosis Endometriosis Rheumatoid arthritis Dyslipidemia

Disadvantages and side effects of using oral contraceptives

- No protection against sexually transmitted diseases
- Need to take pill daily
- Irregular menstrual pattern (missed menses, scanty bleeding, spotting, breakthrough bleeding)
- Headaches (new onset or worsening headaches)
- Depression
- Decreased libido
- Increased risk of cervical ectopy and chlamydial cervicitis
- Breast tenderness
- Nausea and vomiting
- Gallbladder disease may progress in susceptible women
- Hypertension
- Hepatocellular adenoma
- Growth of leiomyomas
- Leukorrhea
- Skin changes (chloasma, telangiectasias)
- Hair loss

tin component of the pill (for example, trying a preparation containing ethynodiol diacetate).

Brenda decides to try a lower dose pill (20 μg ethinyl estradiol) to minimize her symptoms. She returns in 3 months for follow up and does not feel better. She wants to find out more about other long-term contraceptive methods.

What other long-term hormonal contraceptive methods can adolescents use?

Depot medroxyprogesterone acetate and subdermal implants of levonorgestrel are effective contraceptives that require little from patients in terms of use. This makes them attractive alternatives for adolescents.

Depot medroxyprogesterone acetate is administered as a 150 mg injection every 3 months. It is used by 11% of 15 to 19 year olds who are sexually active.[17] The levonorgestrel implant consists of six silastic capsules inserted subdermally; they provide up to 5 years of effective contraception. The implant is used by 2% of sexually active adolescents.[17] These methods are excellent choices for adolescents with developmental disabilities or for teenagers who have difficulty taking their pills regularly.

Adolescents who choose the depot preparation or levonorgestrel implants have usually either already tried other methods or been pregnant. Forty-three percent of teenagers who have been pregnant are likely to choose depot medroxyprogesterone acetate; 34% who have been pregnant are likely to choose levonorgestrel implants, and only 12% are likely to use oral contraceptives.[34] Continuation rates with these methods at 6 months are higher than with oral contraceptives: 87% for the implant compared with 50% for oral contraceptives[35] and 78% for the depot preparation.[36] Convenience, long-term protection, and problems with previous contraception are the most frequent reasons that adolescents choose these methods.

Primary care physicians providing contraceptive services to adolescents should keep syringes of the depot preparation in their office for immediate injection and should make reinjection visits quick (nurses can give them) to increase the chance of adolescents adhering to the regimen. The discontinuation rate among adolescents for depot medroxyprogesterone acetate is fairly similar to that among adults: about 78% continue to use it at 1 year.[34] The most frequent reasons for discontinuation are irregular bleeding, amenorrhea, weight gain, nausea, and depression. It is important to explain to the teenager who chooses a long-term progestin method for contraception that the menstrual changes that occur are not harmful and that any weight gain is likely to be modest.

These long-acting progestins are used less frequently in Europe than in the United States, mainly because European teenagers are more consistent in their pill taking and have better rates of continuation.[37] The confidential, inexpensive, and accessible contraceptive services in western Europe contribute to the better education about contraceptives among teenagers and indirectly to increased compliance with their method of choice.

There are other long-term methods of hormonal contraception that will soon be available and may increase compliance among adolescents: a once-a-month combination hormonal contraceptive injection, a once-a-week combination hormonal patch), a two-implant system that provides effective contraception for 3 years after insertion, and a progestin implant that is available in Europe and is effective for 2 years. Possible future improvements in delivery systems include the availability of transdermal progestin cream, which would be applied to the skin daily; a device for self-injection of a dose of progestin; and the electronic pill reminder device, which sounds an alarm when the pill should be taken.

Are there any other choices that Brenda W could consider to prevent pregnancy?

The intrauterine device is an effective long-term contraceptive but it is not suitable for many adolescents because they are at high risk of contracting sexually transmitted diseases. Older teenagers, perhaps those with children or in monogamous relationships, may be better candidates.[20] Many teenagers are concerned that intrauterine devices reduce fertility; they need to know that nulliparity is not a contraindication to using an intrauterine device and fertility is preserved after discontinuing its use.

Brenda W already uses a condom, which she plans to continue to use to protect against sexually transmitted diseases. She should avoid using lubricants that are petroleum based because they weaken latex; she and her boyfriend should not use a female and a male condom at the same time. She can add a spermicide to increase the contraceptive efficacy of the condom; the failure rate of this combined method is 3.14% at 1 year of use.[38] Adolescents who develop an allergy to or local irritation from spermicides can try nonspermicidal condoms. Diaphragms and cervical caps are not popular among adolescents and women because they are perceived to interfere with intercourse and require manipulation of their genitals. They provide less protection against sexually transmitted diseases than condoms.

Withdrawal continues to be a popular method of contraception among teenagers but it has a high failure rate (about 22.5% at 1 year).[7] Teenagers find the rhythm

method difficult to use partly because their sexual activity is sporadic and unplanned.

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EVIDENCE-BASED CASE REVIEW

Identifying and treating adolescent depression

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Objectives

- Understand the importance of diagnosing and treating depression in adolescents
- Identify the symptoms of depression in adolescents and the difference between depression and normal adolescent moods
- Identify suicidal risk in a depressed adolescent
- Understand when a specialty consultation is needed
- Understand what effective treatments are available

By age 18, about 20% of our nation's youth will have had depressive episodes,[1,2] with girls at substantially higher risk.[2] Major depressive episodes in adolescence last an average of 6 to 9 months,[2,3] 6% to 10% of depressed adolescents have protracted episodes, and the probability of recurrence within 5 years is about 70%.[3] Given that depressed people are as likely to seek help in primary care settings as in mental health establishments,[4] primary care physicians may be the first to be aware of this problem in their adolescent patients.

Case history

Wanda S, aged 16 years, comes for her checkup accompanied by her mother. She is in good health and has had no notable illnesses in the past year. However, Wanda complains of difficulty sleeping in the past few months and of frequently being tired. Her mother asks for a few minutes alone to discuss her concerns about her daughter. She states that "Wanda has been much more irritable than her usual self" and that "her teachers have been complaining that she doesn't seem to attend to her work lately and her grades are slipping." Wanda's mother remembers being an unhappy adolescent herself and asks your advice on how to help her daughter.

When directly questioned, Wanda admits to "feeling pretty bad for the last few months, since school began." She concedes that she feels sad and blue most days of the week and believes that she is "a loser." She's been spending more time alone and, despite complaining of chronic boredom, has little energy or desire to engage in recreational activities.

METHODS

Our conclusions are based on literature searches using both MEDLINE and PsychLIT databases, and most are derived from empiric findings and clinical trials. Because of the relatively modest literature, particularly on treatment, some suggestions are based on published opinions of experts. We have noted when expert opinion is our source.

What does depression look like in adolescents?

According to the *Diagnostic and statistical manual of mental disorders,* fourth edition,[5] an adolescent must have five out of nine characteristic symptoms most of the time for at least 2 weeks for a diagnosis of major depressive disorder. At least one of these symptoms must be either depressed or irritable mood or a pervasive loss of pleasure or interest in events that were once enjoyed. Many seriously depressed adolescents experience both. For example, a depressed adolescent may feel sad most of the day, act crabby, stop hanging out with friends, and seem to lose her love of soccer.

Although all adolescents occasionally become sad, and adolescent angst may be normal and common, symptoms

Summary points

- Adolescent depression is common, and primary care physicians are often in a position to first identify the symptoms
- Depression includes changes in moods, thoughts, behaviors, and physical functioning. Among adolescents, depression may include irritable as well as sad moods
- Unlike normal adolescent moods, depression is severe and enduring and interrupts the adolescent's ability to perform in school, to relate to peers, and to engage in age-appropriate activities
- In assessing the risk of suicide, ask straightforward questions about the adolescent's intent, plan, and means
- Antidepressant medication and psychotherapy may be effective treatments; a combination of these is frequently optimal
- Education about depression with both the adolescent and parents provides a rationale for treatment, may alleviate family misunderstandings, and facilitates recovery

of major depression are more severe in intensity, interfere with social, academic, and recreational activities, and last for months at a time,[2] instead of fluctuating like more typical adolescent ups and downs.[6] Depression occurs as a cluster of signs and symptoms, including emotional, physical, and mental changes that usually signify an alteration from the adolescent's normal personality.[3]

Some adolescents present with depressive symptoms but do not meet the full criteria for having major depression. Dysthymic disorder is characterized by milder but more persistent symptoms than major depression. In dysthymic disorder, symptoms are present much of the time for at least one year in adolescents (2 years in adults).

Wanda's physician prescribes a low dose of fluoxetine hydrochloride (Prozac), a selective serotonin reuptake inhibitor. In addition, the physician refers Wanda for interpersonal therapy to help her cope with the losses and disappointments of the past year, develop new peer relationships, and reintegrate herself into high school activities.

This multifaceted approach will address the physical and psychological symptoms Wanda has been experiencing and provide her with skills she can use to combat future depressive symptoms and interpersonal problems.

What contributes to adolescent depression?

The vulnerability-stress model is useful for understanding depression. According to this model, adolescent depression results from a predisposition for depression, which is then triggered or complicated by environmental stress. The exact nature of the predisposition may include biologic and cognitive factors. This interplay between life's stresses and cognitive and biologic vulnerabilities is important in conceptualizing depression in an adolescent.

An accumulation of adverse life circumstances and events can trigger depression. Family adversity,[7] academic difficulties,[3] chronic medical conditions,[8] and loss in the adolescent's life may increase risk. As Wanda's history illustrates, losses such as her breakup with a boyfriend and failure to make the track team may serve as triggers. Illnesses such as asthma, sickle cell anemia, irritable bowel syndrome, recurrent abdominal pain, and diabetes mellitus may put an adolescent at particular risk.[8]

Cognitive models of depression suggest that it is not stressful events and circumstances but rather the tendency toward negative interpretations about these situations that initiates and maintains depression.[9,10] When an adverse event occurs, the depressed adolescent often understands the cause of the event as something stable, internal, and global. For example, Wanda fails to make the track team and attributes this failure to being a "loser." This cause is stable (unlikely to change), internal (her own fault), and global (affecting everything she does).

Vulnerability to depression may result from biologic or genetic factors and lead to numerous biologic changes. First, studies of family history show that offspring of depressed parents are at high risk for depression[11] and that depressed adolescents have high rates of depression among their family members.[12] Wanda's mother may have been depressed during adolescence. Second, as depressions become more severe, biologic changes may occur, including dysregulation of growth hormone and changes in sleep architecture.[6]

How do you assess adolescent depression?

The diagnosis of depression is made clinically. Physicians need to ask about changes in an adolescent's moods, feelings, and thoughts; behaviors; daily functioning; and any impairment in that functioning, as well as physical symptoms. Furthermore, a medical explanation (for example, thyroid disease or adrenal dysfunction) or substance misuse needs to be ruled out as possible causes. The best methods of assessment supplement the adolescent's self-report with reports from parents or guardians and other outside sources.[2] Whereas youths tend to be better reporters of their internal experiences, such as their mood and thoughts, parents tend to be better reporters of overt be-

Symptoms of major depressive disorder in adolescents

- Depressed or irritable mood
- Loss of pleasure or interest in activities that were once enjoyed
- Significant weight loss or gain when not dieting, or an increase or decrease in appetite
- Insomnia or hypersomnia
- Observable slowing of movements and speech or increased agitation
- Fatigue
- Feelings of worthlessness or excessive and/or inappropriate guilt
- Difficulty concentrating and/or making decisions
- Recurrent thoughts of death or suicide or a suicide attempt

For a diagnosis, an adolescent must have at least 5 symptoms, which must include at least one of either of the first 2 symptoms, for at least 2 weeks.

haviors, such as disruptive behavior in the classroom and defiance.[13] As in all primary care evaluations, ethnic and cultural factors must also be considered. For example, in some cultures, making eye contact with an authority figure may not be considered proper etiquette, and the failure to do so may not reflect a depressed mood.[3] In recent years, several screening tools for depression have been adapted for use in primary care settings.[14,15] The use of these screening techniques can improve the quality of assessments of depression while reducing the time needed for questioning during routine examinations.

When assessing adolescents for depression who already have chronic illnesses, it is important to look at the symptoms that are less likely to overlap with the physical illness, such as feelings of guilt, worthlessness, and hopelessness. It may be difficult to decipher whether changes in sleep patterns, appetite, and increased fatigue are due to the illness or to depression.[3]

How do you assess and intervene when an adolescent is suicidal?

Depression is associated with a markedly increased risk of suicide and attempted suicide.[16-18] About 41% of depressed youths have suicidal ideation, and 21% report a past attempt at suicide.[2] Although many people are concerned that asking directly about suicide may suggest the idea, most depressed youths have suicidal thoughts and are relieved at the opportunity to share them. Unfortunately, adolescents may not volunteer this information unless directly questioned. Often depressed youths have thoughts of death, a desire to die, or a more overt suicidal intention. Asking straightforward, unambiguous questions to assess the risk of suicide is the best strategy. Questions may include "Have you thought that life was not worth living?" "Have you wished you were dead?" "Have you thought about killing yourself?" "What have you thought about doing?" "Have you ever tried to hurt yourself?" or "Have you ever actually tried to kill yourself?" If there is evidence of suicidal thoughts or attempts, it is then critical to establish if the adolescent has the intent, plan, and means to attempt suicide. Questions to ask may include "Are you going to try?" "How would you do it?" and "Do you have a gun (knife, pills)?"

Zander Feil 1999

Symptoms of dysthymic disorder in adolescents

Depressed or irritable mood must be present for most of the day, more days than not, for at least 1 year. In addition, 2 of the following 6 symptoms must be present:

- Poor appetite or overeating
- Insomnia or hypersomnia
- Low energy or fatigue
- Low self-esteem
- Poor concentration or difficulty making decisions
- Feelings of hopelessness

During this time, the adolescent has never been without the depressive symptoms for more than 2 months at a time but does not meet criteria for a major depressive episode.

Having assessed thoughts of death, the intention to die, plans for an attempt, the means to commit suicide, and the availability of support, the physician must estimate the degree of risk and make choices for managing the patient's risk of suicide.[3] First, although thoughts of death or thinking of suicide in vague terms suggests a low risk, such symptoms indicate a need for both immediate intervention and close monitoring (because suicidal risk can increase). Second, when the adolescent acknowledges having a plan or means but no intent, emergency care may not be needed if safety can be ensured through involving parents and other support systems. Parents need to be in close proximity and to remove potential means such as firearms, and the adolescent needs to be referred for psychotherapy. However, if the adolescent does not have a supportive family, has access to lethal means, or has other risk factors (for example, a past suicide attempt, family history of suicide, recent exposure to suicide, substance abuse, bipolar illness, mixed state, or severe stress), more intensive interventions are needed, and the adolescent needs to see a mental health specialist. Finally, when the adolescent has intent, plan, and means, the risk for suicide is high. Such adolescents need help immediately, and psychiatric emergency care may be needed.[3] Regardless of risk, follow-up care is essential to tackle the concerns that contributed to the adolescent's suicidal feelings.

When is a specialty consultation needed?

Depression in adolescents is frequently complicated by other mental health and life problems. Because these ad-

Empirically supported treatment options

Selective serotonin reuptake inhibitors Alters dysfunctional neurotransmitter systems

Cognitive behavioral therapy Monitors and changes dysfunctional ways of thinking

Interpersonal therapy Improves interpersonal skills and problem-solving abilities

ditional problems affect management strategies, it is important to screen for comorbid disorders and problems with psychosocial functioning and life stress. If at any point the primary care physician feels uncertain about the diagnosis and/or management strategy, specialty mental health consultation is recommended. Primary care physicians should obtain a consultation with a specialist if any of the following are present: current or past mania, two previous episodes of depression, chronic depression, substance dependence or abuse, eating disorder, a history of being admitted to a hospital for psychiatric problems, or a history of suicide attempts or concerns regarding the risk for suicide.

TREATMENTS EFFECTIVE FOR ADOLESCENT DEPRESSION

Although research on the treatment of adolescent depression is limited, recent clinical trials have identified promising interventions, both pharmacologic and psychotherapeutic. The physician also needs to help the family to understand the adolescent's symptoms.

Although research has clearly documented the use of antidepressant medication for adults with depression,[19] far fewer studies have examined the use of these agents in adolescents. Selective serotonin reuptake inhibitors are the first choice in medication for depressed adolescents because of their relatively benign side effects, their safety in overdose, and because they only need to be taken once daily.[3] Both tricyclic antidepressants and monoamine oxidase inhibitors are less efficacious in adolescents, are more lethal in overdose,[20] and are not recommended at this time.[3]

Cognitive behavior therapies are effective in treating adolescent depression.[21,22] They assume that developing more adaptive ways of thinking, understanding events, and interacting with the environment will reduce depressive symptoms and improve a youth's ability to function. The cognitive component of the treatment focuses on helping adolescents identify and interrupt negative or pessimistic thoughts, assumptions, beliefs, and interpretations of events and to develop new, more positive or optimistic ways of thinking. The behavioral component focuses on increasing constructive interactions with others to improve the likelihood of receiving positive feedback.

Interpersonal therapy emphasizes improving relationships. The therapy is brief and focuses on the problems that precipitated the current depressive episode. It helps the adolescent to reduce and cope with stress. Two studies[23,24] have shown its effectiveness in reducing depression.

No definitive guidelines have been published for deciding when to begin with medication, psychotherapy, or a combination of medication plus psychotherapy. We have, however, suggested several considerations based on common sense to help clinicians make this decision.[25-27] For example, medication should be considered if an adolescent does not seem interested in thinking about problems, has limited cognitive abilities, is severely depressed with vegetative symptoms, has had two or more episodes of depression, has not responded to 8 to 12 weeks of psychotherapy, or cannot regularly get to therapy sessions. Conversely, psychotherapy should be considered as the first alternative for adolescents who fear medication or do not like taking pills, prefer talking about problems, have complex life stressors that need sorting out, have contraindications to medication (such as pregnancy or breastfeeding), or have not responded to an adequate trial of medication. For some adolescents who have combinations of severe depression, limited cognitive skills, and complex life stressors, it may be best to begin with both medication and psychotherapy.

Parents may have little understanding of the adolescent's symptoms and sometimes interpret falling grades and lack of interest as willful behavior. By giving parents information about the symptoms, causes, and treatments of depression, the physician can help them to help their child to recover, to monitor symptoms, and to facilitate ongoing care.[3] Families differ in their willingness to consider the possibility that their child may have a psychological or psychiatric problem. For personal and/or cultural reasons, some families may be more receptive to a medical model, which identifies the depressive symptoms as part of an illness, and so they are more comfortable with a pharmacologic intervention. Other families may find a cognitive explanation more acceptable and see psychotherapy as a more palatable option. Further, primary care physicians may note that on finding out about their adolescent's depression, parents may feel guilty or feel they are being blamed and thus be resistant to suggestions for interventions. Appropriate education about depression and possible causes may help allay these concerns.

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A BOOK TO MAKE YOU THINK

Framing Youth: 10 Myths about the Next Generation by Michael Males, Common Courage Press, 1999

In an attempt to shatter the myth that, "Today's youth are America's worst generation ever," Michael Males leads the reader on a journey through chapters filled with facts and figures culled from the archives of government documents, foundation reports, and excerpts and figures from the research literature. The result is a rambling, often repetitive, but well supported thesis that today's teens are no worse than those in previous generations. Males takes exception to blaming teens for excessive drinking, violent crimes, poor driving, and apathy, and supports his argument by drawing comparisons to adolescents of the past who tested legal and social limits yet became responsible adults. The author also carefully documents how teens are perceived by law enforcement, insurance companies, educators, politicians, and the media.

If there is a fault with the book, it is that Males minimizes the risks teenagers face and the destructive behaviors that are by and large preventable. The reader longs for help to guide us toward the future, but little is offered. Males does, however, enable the reader to reflect on how an entire generation has been blamed for being unruly, self-interested, and drug seeking. It is this generation about which he writes that will soon take charge of our destiny.

Michael S Wilkes
Editor, *WJM*

Best Practice

TOPICS IN REVIEW

A primary care approach to adolescent health care

Adolescents are generally thought to be healthy, but at least 20% of North American adolescents have a serious health problem.[1] Most adolescent morbidity and mortality are due to intentional and unintentional injuries; alcohol, tobacco, and other drug misuse; depression; unplanned pregnancies; and sexually transmitted infections.[2] These problems are often rooted in behaviors that are diagnosed not with a laboratory test or a physical examination but through open communication between the physician and the adolescent. In the past few years, several guidelines have been developed for the care of adolescents,[3-6] each emphasizing the importance of psychosocial screening.

Compared with other age groups and relative to their proportion of the population, adolescents in the United States underuse the health care system. Adolescent men are less likely than young women to visit physicians.[7-9] They also tend to use emergency departments, free clinics, and family planning clinics as their source of primary care. Adolescents are more likely to be uninsured than any other age group.[10-13] Physicians' visits with teens are typically short, with a mean duration of 16 minutes. Counseling or education is given to teens on only 50% of visits with their physicians. Adolescents report being more concerned about their physicians' characteristics than characteristics of the site or system. Teens prefer health care professionals who are honest, knowledgeable, and experienced and who wash their hands in the teens' presence. They want physicians who treat all patients equally, who emphasize confidentiality, and who relate well to teens.[14]

We describe the approach to adolescent care that we use in training residents and students who rotate through the Venice Family Clinic, Los Angeles, a free clinic with more than 70,000 total visits a year. We train nurse practitioners; pharmacy students; residents from internal medicine, pediatrics, family medicine, and obstetrics and gynecology; and third- and fourth-year medical students. Our goal is to provide trainees with the tools to enable them to feel comfortable and competent interviewing and examining teens. This approach is based on the training we provide, years of practice and teaching, and the literature cited.[2]

Summary points

- The encounter should begin with the teen and parents discussing the teen's past medical history and parents' concerns
- Parents should be asked to wait in the waiting room and be reassured that they will be invited back in to discuss any remaining issues
- Once alone with the teen, establish ground rules for confidentiality
- The teen's history yields far more information than the physical examination and results of diagnostic tests

APPROACH TO ADOLESCENTS

If adolescents do not trust their physicians, they will not feel comfortable discussing sensitive health concerns.[14,15] To earn this trust, the physician must be seen as an advocate for the teen. Issues of consent, confidentiality, and its limits are best discussed early in the visit.[14,15] A useful beginning is an initial introductory meeting with both the adolescent and parents. During this initial encounter, we establish what the parents' concerns are, obtain a family history, and ask about previous medical problems. This begins the transition from parent to teen as the medical historian. We next ask parents to wait in the waiting room so that we can speak privately with the adolescent. We interview the adolescent alone, perform a physical examination with a chaperone, and then invite the parents back into the room at the conclusion of the visit to discuss our findings.

It is important for teens to establish a separate relationship with the physician. On occasion, parents may express some resistance, and we then stress the importance of an adolescent having a physician with whom the teen can confide and discuss difficult issues that may arise in the future. We reassure parents that at the end of our encounter we will invite them back into the room to discuss any remaining issues.

Renna Brown-Taher 1999

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Types of minors' consent laws

Consent by nature of the condition:	Consent by virtue of the minor's status
Emergency	Emancipated by age
Sexually transmitted disease prevention, diagnosis and treatment; and/or reportable communicable or contagious disease	Emancipated by judicial decree
AIDS treatment and/or HIV testing	Living away from home and managing own financial affairs
Pregnancy prevention, diagnosis and treatment (excluding sterilization)	Is or has been married
Abortion	Member of the armed forces
Rape, incest, sexual abuse	A parent
Alcohol and/or drug abuse treatment	A high school graduate
Mental health (admission to hospital and/or outpatient treatment)	Mature minor

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If the parents are not present and have not given us explicit permission to treat their child, consent may be implied by virtue of the nature of the condition or the status of the teen (box). Laws about consent vary from state to state and practitioners should become familiar with the law in those states in which they provide care.

Once alone with the adolescent, we explain that our conversations are confidential, to the extent allowed by law.[16] The law requires that only if we discover that an adolescent is in danger of hurting himself or herself or others does such a revelation need to be reported to the appropriate authorities.

During our discussion with the adolescent, we listen carefully to both what is said and what is not said. Conversation begins with a nonthreatening discussion of topics that may be of interest to the adolescent, such as inquiring about extracurricular activities or favorite music. The goal is to assist the adolescent in identifying potentially risky behaviors that may endanger their health and assessing their motivation to change those behaviors. We use the technique of motivational interviewing, which provides adolescents with feedback on risks and promotes a sense of responsibility for their health.[17] Teens want factual information rather than authoritative instruction on what to do. Avoid using slang because most teens will be aware that this is not your customary language. In addition, by the time most physicians have heard of a purported teen expression, it is likely already outdated.

We use five premises that our trainees find useful when caring for adolescents (see shaded box).

In offices or clinic settings with a variety of patients of different ages, scheduling times when only teens will be seen may be helpful. Teens feel more comfortable having other teens in the visiting area. This also provides an opportunity to play educational videotapes, have different devices or materials out for display, or provide educational brochures that may not be appropriate for younger age groups. Placing sensitive information in individual examination rooms rather than the waiting room gives teens the opportunity to take or read it unobserved by other teens.

We take advantage of an adolescent's visit to our clinic by offering a psychosocial screening examination. A psychosocial assessment tool has been developed to assess issues of home, education, activities, drugs, sexuality, suicide or depression, and safety (HEADSSS).[18] This assessment tool provides an entree to discuss the major psychosocial issues of adolescents (table 1). Although these questions are personal, teens are reported to prefer to discuss these issues with physicians.[19,20] Assurances of confidentiality increase the number of adolescents who will discuss sensitive information about sexuality, substance misuse, and mental health and those who are willing to seek future health care. For this reason, we avoid administering written questionnaires in the waiting room.

Points to watch for in the HEADSSS assessment

If the adolescent has run away from home or spent long periods of time home alone, more attention needs to be directed to issues related to drug misuse, sexuality, and depression. A sudden, unexplained drop in grades or frequent absences should lead to further exploration of sexuality, drug misuse, family problems, or depression. School failure should be explored as a possible early indication of other risk behaviors in high school students.[21] Questions about friends, the use of free time, and attendance at parties can provide indirect information about sexual activity, drug misuse, and mental health. We ask about self-image, including body building and associated steroid use and self-perception of weight. Reports suggest that anabolic steroid use is increasing in middle and high school students.[22]

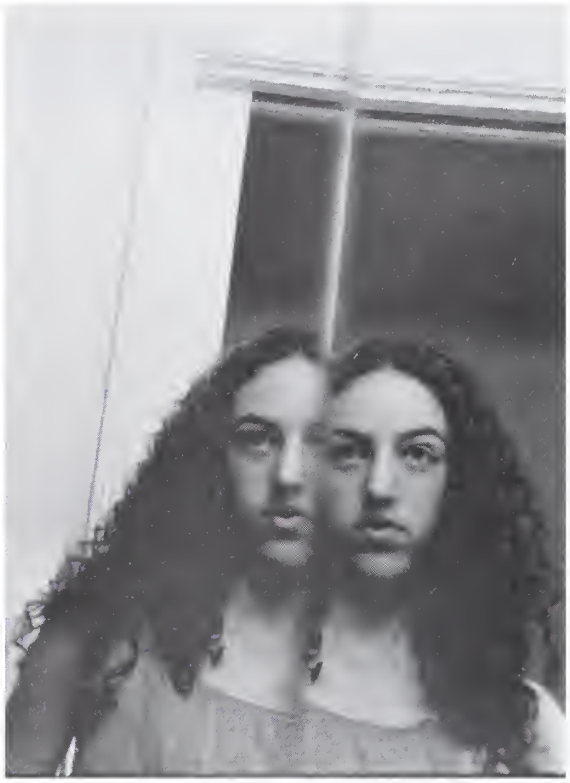
The five "F"s

1. Explain Facts: adolescents should have a clear understanding of their illness.
2. Explore Fears adolescents may have concerning their illness or its effects on their life. They may also be worried about their body image, their identity, their peers, or other interpersonal relationships.
3. Address any Fables: adolescents may be misinformed about their illness or about adolescence; eg, the effects of masturbation.
4. Explore the adolescent's relationship with their Family. What are communication and trust like within the family unit? How does the teen settle conflicts that arise at home?
5. Ask how the adolescent views the Future. We make it clear that we are accessible, and the teen is given a contact phone number.

Table 1 *Assessing issues of home, education, activities, drugs, sex, suicide or depression, and safety*

Issue	Sample question
Home	Where do you live? Who do you live with? Do you share a bedroom? With whom? How do you get along with the people you live with? How much time do you spend at home? What do you and your family argue about? Can you go to your parents with problems? Have you ever run away from home?
Education	What grade are you in? What grades are you earning? Have they changed? What are your best and your worst classes? Why? Do you need extra help in school? Do you work after school or on weekends? Have you ever failed any classes or a grade? Do you ever cut classes?
Activities	What do you do for fun? What activities are you involved in during and after school? Are you active in sports? Do you exercise? Who do you do fun things with? Do you have a best friend? Who do you hang out with? Who are your friends? Who do you go to with problems? What do you do on weekends? Evenings?
Drugs	Do you drink coffee or tea? Do you smoke cigarettes? Have you ever smoked one? Have you ever tasted alcohol? When? What kind and how often? Do any of your friends drink or use drugs? What drugs have you tried? Have you ever injected drugs or steroids? When? How often do you use them? How did you pay for the drugs?
Sexual activity or sexual identity	Have you ever had sex with men? Women? Both? Have you ever had sex unwillingly? How many sexual partners have you had? How old were you when you first had sex? Have you ever been pregnant? Have you ever had an infection resulting from sex? Do you use condoms or another form of contraception or sexually transmitted disease (STD) prevention? (use specific names for STDs). Have you ever traded sex for money, drugs, clothes, or a place to stay? Have you every been tested for the human immunodeficiency virus, or HIV? Do you think it would be a good idea to be tested?
Suicide or depression	How do you feel today on a scale of 0 to 10 (0 being very sad and 10 being very happy)? Have you ever felt less than 5? What made you feel that way? Did you ever think about hurting yourself, that life wasn't worth living, or hope that when you went to sleep you wouldn't wake up again?
Safety	Do you regularly wear seat belts when riding or driving in a car? Do you skateboard or rollerblade, and if so, do you wear protective gear? Does anyone at home own a gun? If so, where is it kept? Does it have a safety latch on it? Has anyone ever hurt you or intentionally destroyed something you value? Do you ever feel unsafe at home, school, or at work or play? How do you and your parents resolve conflicts? Have you ever been hit, pushed, or shoved? Has anyone ever touched you in a private place against your will?

When discussing the topic of alcohol, tobacco, or other substance misuse, remain nonjudgmental. Those who care for adolescents should be familiar with the illicit drugs that are used in the community. Alcohol is still the most commonly misused substance in this age group. Aside from its direct toxic effects, alcohol misuse may lead to harmful effects such as impaired automobile, bike, or skateboard operation; depression; and other risky behaviors. More than two thirds of teens have had at least one sexual partner by age 18 years, and nearly one quarter have had more than four sexual partners.[2] The sexual partner of teen girls is usually an older man. In fact, in one study, two thirds of



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teenaged mothers had an adult partner more than four years older.[3] It is useful to acknowledge that questions might be embarrassing but that their answers are confidential and that they are being asked to provide them with appropriate health care. We ask questions such as, "Other teenaged girls have told me that they feel pressured to have sex with their boyfriends. Have you ever felt this way?" A frank discussion of condom use, including a demonstration of how to use condoms, is an integral part of a discussion of safe sex. Studies have shown that when physicians take the time to discuss and demonstrate the appropriate use of condoms, teens are more likely to engage in safe sex than those teens who had not had such discussions or demonstrations.[23]

By concentrating on risky sexual practices rather than sexual identity, physicians emphasize that the practice is risky, not the individual or their sexual preference. Gay or lesbian teens may not be in a stage of developing their sexual identity and may not feel comfortable being identified as gay or lesbian. Clinicians need to be aware that, in our society, being gay or bisexual is possibly associated with depression; an increased risk of suicide; social stigma; and physical, sexual, or emotional abuse.[24-26] Assess both past and current feelings of depression and risk for suicide.[27] The physician can also discuss other safety measures such as wearing seat belts, fighting with friends, domestic violence, and sexual abuse.[28]

PHYSICAL EXAMINATION

A physical examination in an otherwise healthy teenager is unlikely to yield much useful information. Some indications for a pelvic examination include a direct request from the patient, the patient is sexually active, or the patient has abdominal or pelvic pain. It does not need to be done routinely on every adolescent woman. There is debate in the adolescent literature about whether urine screening in an asymptomatic adolescent can replace a routine yearly pelvic examination and Papanicolaou smear.[29-31] Most evidence-based guidelines recommend yearly Papanicolaou smears in sexually active teens.

A teen's first pelvic examination should be done by a physician who is comfortable and experienced in performing pelvic examinations. The examination is best explained to the teen while she is in her street clothes and carried out with a chaperone present, not a parent. We ask teens if they want their parent or someone else in the room for support. The examination should be scheduled with plenty of time for questions. We provide a mirror for the teen so that she may see what we are doing if she so wishes.

It is often more comfortable for a teen's first pelvic examination to perform the bimanual examination before the speculum examination. To minimize the patient's anxiety about the examination, begin by touching a neutral area before examining the genitalia, and avoid sudden motions. If a plastic speculum is being used, the teen should be warned that it might make a cracking or clicking sound when opened.

PREVENTION

Many issues related to prevention could be discussed (table 2). Diet, physical appearance, exercise, and anticipatory counseling are topics that have universal appeal. It can be helpful for physicians to discuss the physical and emotional changes that adolescents might expect to go through during the next several years (anticipatory guidance).

Several issues need to be discussed before closing the interview. Before calling the parents back into the consultation room at the end of the visit, consult with the adolescent about what you will discuss and what will remain confidential. Both the adolescent and the parents should be offered a chance to ask questions. The parents may ask to see the physician alone. This can be accomplished most comfortably either while the adolescent is changing in preparation for their physical examination or before beginning the initial discussion with the adolescent. Remember that the teen, not the parent, is your patient.

The care of adolescent patients can be extremely rewarding. At times it can be frustrating and challenging, but following our guidelines, physicians and teens will be able to work together to improve the teens' health.

Table 2 *Prevention counseling*

Condition	Background	Interventions
Alcohol and drug abuse	• Most adolescents experiment with alcohol. • Alcohol and drugs can lead to or be a symbol of emotional problems. • Adolescents are twice as likely as adults to drive under the influence of alcohol and are considerably more at risk to drive with someone who is under the influence of alcohol. • Most adolescents are willing to provide accurate information on substance abuse if time is taken to assure confidentiality and the clinician appears interested and non-judgmental. • Screening tests for drug use are of questionable value in the care of adolescents.	• Deliver preventive messages at every routine visit. • Ask about alcohol drug use without parents or guardians present. • Ask questions nonjudgmentally about substances used, frequency of use, and quantity of use as well as setting in which such use occurs. • Reinforce that if teens do drink or use drugs, that they take preventive steps such as not driving while under the influence. • Look for signs of substance abuse, such as aggressive behavior, recent change in personal appearance, personality changes, cutting classes, changes in school performance.
Dental diseases	• Dental and periodontal diseases are common and present long term risks. • Dental conditions can be disabling, disfiguring, and costly. • Dental caries, gingivitis, and periodontal disease, although primarily occurring in later life, are preventable.	• Provide counseling through discussion and printed material. • Pay particular attention to high risk patients, such as those with diseases such as diabetes, smokers, and those with little access to conventional dental care. • Counsel teens on preventive oral hygiene, including brushing with fluoride toothpaste, flossing, and limiting dietary intake of sugar. • Encourage teens to be seen regularly by a dental care provider.
Injuries	• Accidents and unintentional injuries are the leading cause of death in adolescents, including motor vehicle accidents, head injuries, firearms, and drownings. • Safe practices substantially reduce injuries including seatbelts, helmets (for use on motorcycles, bicycles, skateboards, and roller blades/skates), and the use of floatation devices when playing in water. • Alcohol and substance misuse often play a key role.	• Promoting behavior change. • Discuss injury prevention at each visit to target in depth discussions to high-risk areas. • Have printed information available. • Encourage teens to learn to swim or at least learn about water safety. • Encourage teens to learn CPR and/or appropriate basic safety skills.
Tobacco use	• Most smokers begin to smoke as teenagers. • Once a teen begins to smoke he or she is likely to continue. • Nearly a quarter of male teens use smokeless tobacco. • Smoking often occurs in the context of other risky behaviors. • Prevention programs have been effective in reducing smoking up to 4 years following the counseling.	• Clinic and staff should regularly ask about smoking use. • Effective strategies include stickers on the chart, adding smoking to list of vital signs, and direct questioning. • When patients do not use tobacco, provide positive reinforcement. • Enroll a teen who smokes in a smoking cessation program.
Sexual activity	• Teens are sexually active, and many will become pregnant. • Teen pregnancy poses significant problems, both physical and mental. • In teens who delay seeking effective prenatal care, pregnancies are at a particularly high risk. • Progesterone with condoms and oral contraceptives with condoms are equally effective is used as directed, and are well tolerated by teenage women. • Hormonal contraception (either medroxyprogesterone acetate or oral contraceptive pills) is safe and effective.	• Begin discussion about pregnancy with teens well before they become sexually curious. • Regularly discuss sexuality, the prevention of sexually transmitted diseases, sexual orientation. • Adolescent women should be told about the risks and benefits of emergency contraception. • Condoms should be available, and staff should feel comfortable showing patients how to use them.
Physical activity	• Physical activity declines during adolescence. • Physical activity and fitness reduce the risk of mortality, morbidity, coronary artery disease, hypertension, obesity, diabetes, osteoporosis, depression, and anxiety.	• Ask all patients about their physical activity. • Provide positive reinforcement for those who are active. • Emphasize lifetime sports, such as tennis, swimming, jogging. • Encourage increased daily physical activity. • Be alert for signs of excessive exercise, steroid use, or eating disorders. • Work to encourage health education programs and lifetime fitness skills.

CPR = cardiopulmonary resuscitation
Adapted from *Guidelines for adolescent preventive services (GAPS)*. Chicago: Dept. of Adolescent Health, American Medical Association; 1993; Green M, ed. *Bright futures: guidelines for health supervision of infants, children, and adolescents.* Arlington, VA: National Center for Education in Maternal and Child Health; 1994.

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Myths and variations in normal pubertal development

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Myths about puberty are common. These misconceptions create needless anxiety, for example, in parents who confuse the isolated development of pubic hair or breasts with true sexual maturation. Even healthcare providers are not immune: some may be unaware of recent data suggesting that in healthy girls puberty may begin earlier than the textbook age of 8 years and others may mistakenly inform parents that only a couple of inches of growth remain for their 10-year-old daughter who has started menstruating. This article discusses common myths that surround the normal variations in pubertal development.

METHODS

Topics chosen for discussion in this article reflect the most common misconceptions about pubertal development en-

Summary points

- The appearance of pubic hair does not necessarily mean that true puberty has started
- The isolated development of breasts in girls younger than 6 years old without other changes is most likely benign premature thelarche
- Breast development is the earliest sign of true puberty and may occur in healthy white girls as early as age 7 and even earlier in African American girls
- Girls with normal early menarche (age 10) will grow an average of 4 inches more
- Boys who are distressed by pubertal delay may be treated with low doses of testosterone to accelerate growth and pubertal development without affecting their final height

countered in my practice. The evidence presented was obtained from published articles and reviews identified through MEDLINE searches, as well as practice guidelines derived from recent subspecialty meetings, and pediatric endocrinology discussion groups on the Internet.

BENIGN PREMATURE ADRENARCHE

Myth: pubic hair signals the onset of puberty

The reality is that without breast or testicular enlargement, pubic hair (pubarche) and body odor indicate increasing adrenal secretion of weak androgens (adrenarche) rather than activation of the hypothalamic-pituitary-gonadal unit (true puberty). Before 1997, premature adrenarche was defined as pubic hair developing in girls younger than 8 years old and boys younger than 9 years. However, the results of a large, cross-sectional study suggest that the development of pubic hair may be normal in white girls as young as 7 years and in African American girls as young as 6 years.[1]

Although the definition of normal puberty, as compared with premature, remains in flux, unquestionably early pubarche is likely to be benign if it meets the criteria in the box. If these criteria are met, then for most children a diagnostic workup can be limited to continued observation. Some physicians order an x-ray film to check that the skeletal age of the child is no more than 2.5 standard deviations (typically about 2 years) above the chronologic age. An abdominal ultrasound scan or blood tests for dehydroepiandrosterone sulfate, 17-hydroxyprogesterone, and testosterone are rarely needed.

BENIGN PREMATURE THELARCHE

Myth: breast development signals the onset of puberty

In reality breast enlargement occurring in isolation in girls younger than 6 years or in infants is more likely to represent benign premature thelarche than true precocious puberty. The criteria in the box may be useful in making this differential diagnosis. In cases in which true precocious puberty is suspected, sensitive methods of diagnosis include pelvic ultrasound scanning (uterine enlargement confirms that there is an increased effect of estrogens and bilateral ovarian enlargement strongly suggests activation of the central hypothalamic-pituitary axis) and ultrasensitive immunochemoluminometric assays of luteinizing hormone.[2]

Characteristics of benign premature adrenarche

- Sparse to moderate development of pubic hair
- Sparse or no growth of axillary hair
- Mild or no acne
- Minimal or no acceleration in growth rate
- Mild apocrine body odor
- No lowering of voice
- No breast or testicular enlargement
- No clitoromegaly

Characteristics of benign premature thelarche

- Age younger than 6 years
- Increased breast profile
- Minimal or no growth of breast papillae (nipples) or areolae
- No growth of labia minora
- Minimal or no dulling of the vaginal mucosa, which remains shiny and reddish
- No acceleration in growth
- No pubic hair

EARLY NORMAL PUBERTY

Myth: girls are starting puberty earlier

The reality is that this may be partially true: although the average age at menarche (12.8 years) has not fallen much in the past 60 years, more recent data suggest that the lower age limit for normal thelarche or pubertal onset is below the threshold of 8 years that is cited in many texts.[1,3] Recently published guidelines suggest that extensive evaluation is not routinely needed in healthy girls with thelarche or puberty occurring as early as age 7 in white girls or 6 in African American girls.[4] However, there is disagreement over whether thelarche or puberty occurring in 6 and 7 year olds is normal, and most pediatric endocrinologists still recommend close evaluation and follow up of girls who start thelarche and the progression of puberty at this age. For boys, the lack of new clinical data and the greater chance of disease lead to a continuing recommendation that boys younger than 9 years who have penile enlargement, scrotal thinning, and accelerated growth should be formally evaluated.

Possible reasons for the finding of earlier thelarche or puberty include ascertainment bias; exposure of children to environmental estrogens from plastics, foods, and pesticides; improvements in socioeconomic status; or earlier maturation caused by the rise in the average body weight of children. This last possibility raises interesting questions about the relation between body weight and pubertal onset. For some species the relation is direct: cattle ranchers know that sexual maturity in a heifer depends more on

reaching a critical weight than a specific age. For humans, mild obesity is associated with a slight advancement in skeletal age and earlier onset of puberty.[5] Theories about the action of the hormone leptin and its role in the regulation of body weight and puberty and fertility are evolving rapidly and have implications for conditions such as precocious or delayed puberty, anorexia nervosa, obesity, and anovulation.[6]

Myth: menarche means the end of growth is near

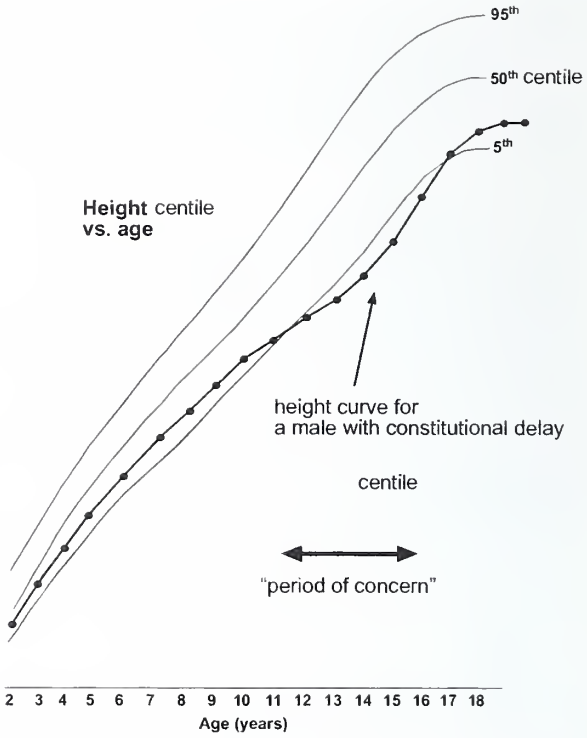
The reality is that the average gain in height after menarche is about 7 cm (3 inches), and it is even greater for girls who menstruate on the early side of normal. Follow-up data from the Fels Longitudinal Study show that girls who start menstruating at age 10 grow, on average, 10 cm (4 inches), while those in whom menarche is delayed until age 15 grow, on average, 5 cm (2 inches).[7] Additional reassurance is provided by data suggesting that earlier thelarche is associated with a increased interval before menarche: for example, an 8- or 9-year-old girl who has just started developing breasts will have an average time to menarche that is closer to 3 years than 2.[8] The combination of a longer time before menarche and greater height gain after the start of menstruation may explain why girls who start puberty at about 6 to 8 years old do not end up short as adults. Conversely, the lesser gain in height after menarche and shorter interval between thelarche and menarche in girls with pubertal delay may explain why the pharmacologic delay of puberty (using depot gonadotropin-releasing hormone agonist preparations) has inconsistent and limited effects on increasing their final height.[9]

CONSTITUTIONAL DELAY OF GROWTH AND PUBERTY

Myth: dropping down to a lower centile on a height chart always signifies a pathologic condition

The reality is that in many cases an adolescent who is falling off the growth curve will prove to be healthy but have a constitutional delay of growth and puberty. These late bloomers typically move to a lower height centile sometime before the age of 3 years, then remain on the same height centile throughout most of their childhood. At around 12 to 14 years of age for boys (10 to 12 years for girls), which is the typical period of concern, they again cross downward to a lower height centile (figure), due to the delayed onset of their pubertal growth spurt relative to their peers.

Unfortunately, there is often no certain method to distinguish healthy adolescents who are late bloomers from the rarer few with true disease. A comprehensive



Typical height pattern (plotted on a standard growth chart) for a boy with constitutional delay of growth and puberty. Note the decrease in height centile starting around age 12 years

history and physical examination, emphasizing the detection of dysmorphism or diseases of the central nervous system and gastrointestinal system, is mandatory. Careful interpretation of a bone-age x-ray film, tempered by an understanding of its limitations, allows for an estimate of the adolescent's final adult height and comparison with the calculated mid-parental target height. For the experienced physician with proper tools (for example, a Prader orchiometer to measure testicular size), accurate assessment of pubertal development provides as much informa-

Laboratory investigations that are useful in slowly growing adolescents

- Free thyroxine concentration
- Insulin-like growth factor-1 (somatomedin C) concentration
- Insulin-like growth factor binding protein-3 concentration
- Complete blood count
- Erythrocyte sedimentation rate
- Serum electrolytes, BUN, creatinine
- Urine analysis
- Growth hormone stimulation testing (may be unnecessary in many cases)

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tion as the bone-age x-ray film: the typical male adolescent with no delay in skeletal age has an onset of testicular enlargement (>3 ml volume or >2.5 cm [>1 inch] in length) at 11.5 years of age, increasing to 12 ml (corresponding to peak growth velocity) by 14 years of age.[10] The onset of breast development in a girl suggests a skeletal age of 10 or 11 years.

At this point, physicians may take divergent approaches, with some sending the adolescent for laboratory investigations immediately and others preferring to observe height velocity (correlated with skeletal age rather than chronologic age) before embarking on more extensive evaluation. Some laboratory investigations that are useful in evaluating these adolescents are shown in the box.

Myth: testosterone treatment of boys with constitutional delay reduces final adult height

In reality, in boys with constitutional delay and a skeletal age older than 10 years, low-dose testosterone (typically 50 mg monthly intramuscularly for 3-12 months) accelerates growth (often doubling height velocity) and the development of secondary sexual characteristics without decreasing their final adult height.[11] The onset of the growth spurt may occur up to a year earlier than without treatment. Low doses of oral anabolic steroids (up to 2.5 mg/day), such as oxandrolone or fluoxymesterone, also increase growth without having negative effects on final height but are used less often because of their potential hepatotoxicity and less satisfying effects on secondary sexual characteristics.[12,13] At these low doses, testicular enlargement should continue, providing reassurance that the boy has simple constitutional delay and not a more permanent deficit of hypothalamic-pituitary function (hypogonadotropic hypogonadism).[14]

At higher doses (particularly those used off-label by athletes), androgens will decrease adult height by promoting maturation of epiphyseal growth plates more rapidly than linear growth. It is critical to clarify the differences between carefully monitored, low-dose testosterone treatment of constitutional delay and anabolic steroid abuse used to gain unfair athletic advantage.

CONCLUSIONS

Adolescents and younger children with benign variants of normal pubertal development—such as premature adrenarche or thelarche, early normal puberty, and constitutional delay—are common in pediatric practice. Recognizing that such variants are normal is an important skill. By refuting the most common myths about these variants and other aspects of normal puberty, providers can greatly relieve the anxiety of parents and children and avoid making unnecessary referrals.

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Should short children who are not deficient in growth hormone be treated?

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There are many causes of short stature during childhood and adolescence.[1] About half of all children referred to pediatric endocrinologists for an evaluation of their growth show normal variants of short stature. This means that their height falls below the conventional cutoff of 2 standard deviations below the mean but they have healthy increments in growth that parallel the growth channels on standard growth charts for the general population.[1,2] A deficiency in growth hormone is the main endocrinologic cause of pathologically short stature.

A major objective of treatment with growth hormone in children (who typically are prepubertal at the start of treatment) is to accelerate the speed of growth to reduce discrepancies in height with peers during childhood and adolescence and to enable them to reach an adult height that is commensurate with their genetic potential.[3] Because the sole source of growth hormone before 1985 was pituitary glands taken from cadavers, there was never enough growth hormone available to meet the needs of children who had a deficiency. The treatment was, therefore, restricted to those with the most severe deficiencies. The hormone became more widely available after biosynthetic growth hormone was manufactured in 1985.

The availability of biosynthetic growth hormone ensures that children who are deficient can have replacement therapy, but it also has created the opportunity to treat children who are short but do not have a deficiency. As time passes, some of these newer, nontraditional applications are becoming accepted as the standard of care in the United States.[4]

The treatment of short children who are not deficient in growth hormone is predicated on the widespread belief that being taller improves children's psychological well being.[5] Moreover, it is thought that increased height will reduce or eliminate their risk status for the development of problems as adults. The broader use of this comparatively intensive, chronic, and costly hormonal intervention is supported by complaints made by short youths of psychosocial stresses related to their height and society's beliefs about the disadvantages of being short.[6] In the United States, growth hormone is more frequently prescribed to youths who are not deficient in growth hormone than to those who are.[4] This aspect of clinical practice remains controversial.[4,7] Practice guidelines on the use of growth hormone in children who are short clearly state that decisions regarding "instituting or continuing therapy should be individualized ... and be guided by the goal of improving the quality of life of the child and future adult."[8] Unfortunately, these recommendations, designed for pediatric endocrinologists, provide no guidance in how to conduct an evaluation of the quality of the child's life. Reviewing the assumptions that are frequently made about the quality of life of short children who are not deficient in growth hormone may help clinicians in making decisions on managing these children.

Summary points

- Growth hormone therapy is increasingly being used to treat youths who are not deficient in growth hormone
- The psychosocial difficulties associated with being short seem to be less severe than assumed, and it is unclear whether treatment offers psychological benefit
- Cost-utility analyses of growth hormone therapy should consider the specific circumstances and the value that children or their parents place on the prediction of increased height

METHODS

Because of space limitations, this review is selective. The investigations cited should only be considered as examples. Studies were identified on MEDLINE and PsychINFO using the terms "short stature" or "growth hormone" combined with "behavior (childhood or adolescence)." Priority was given to studies with strong research designs. The Cochrane Database of Systematic Reviews does not include a review of growth hormone therapy in the treatment of short children who are not deficient in the hormone.

ASSUMPTIONS ABOUT QUALITY OF LIFE

Short children and chronic psychosocial stress

Early behavioral research on the psychosocial aspects of short stature showed that it was associated with psychosocial stressors such as stigmatization (teasing) and juvenilization (that is, children being treated as if they were younger than they are because of the misperception of their chronological age).[9] These studies were generally restricted to patients with complex medical conditions (for example, hypopituitarism, Turner syndrome, or chondrodystrophy). It is not clear if these findings are generalizable to the larger population of children with short stature who are being seen by endocrinologists.

Studies of consecutively referred patients, ages 4 to 18 years (some with normal variants of growth patterns and others with pathologic patterns, including those with growth hormone deficiency), have shown that slightly over half of these patients were regularly teased about being

short.[10,11] The same proportion experienced being treated as if they were younger than their chronologic age. These clinical studies corroborate long standing anecdotal reports that being short is associated with psychosocial stress in childhood and adolescence. But not all short children in these studies shared these experiences and in neither study were the stressors related to the child's relative height.

Short children and problems with psychosocial adaptation

It is commonly assumed that children who are short have more clinically significant behavioral or emotional problems.[9] This has not been found in studies of patients between 4 and 18 years of age in which selection biases are minimized. There is little or no evidence from the reports of parents or children that youths of short stature that is either a normal variant or pathologic (including growth hormone deficiency) have either low self-esteem or a higher than average amount of behavioral or emotional problems.[2,10,11]

One report found that before starting growth hormone therapy, more problems were reported by the parents of short patients with sufficient growth hormone than by a normative sample.[12] These were the same norms used for comparison in another study that found relatively few differences between the groups.[2,11] Several methodologic problems detailed elsewhere, however, complicate the interpretation of data from the study that identified more psychosocial problems among the short patients.[13]

Contrary to earlier reports, which were largely anecdotal or based on poorly designed studies, the psychosocial adaptation of short children, even those who are referred for medical evaluation, seems to be comparable to youths in the general population.

Short youths in the general population and problems with psychosocial adaptation

Although it is rarely articulated, it is often assumed that short children and adolescents who are not referred for a medical evaluation (in fact the majority of those with short stature) are similarly at risk for problems of psychosocial adjustment. The Wessex Growth Study is a longitudinal, noninterventional study that was conducted in the United Kingdom to assess the psychological development of short youths in the general population.[14] All children with a height below the third centile of the norms for their age and sex were compared with a group of pair-matched classmates of average height (10th to 90th centiles for height). In the most recent report on this cohort (at ages 11-13 years), the short children did not differ from classmates on measures of self-esteem, self-concept, or teacher's report of behavioral problems. The short students were, however, more dissatisfied with their height than the control group.

In a recent epidemiologic study in New York (Sandberg DE, Bukowski WM, Fung C, et al, unpublished data), the popularity, friendships, and reputation of short students among peers in grades 6-12 were investigated using techniques of peer nomination in the classroom. Height was unrelated to popularity, the total number of friends, or whether the friendship was reciprocated. In terms of reputation among peers, short youths were distinguished from classmates on only one item ("looking younger"). No other behavioral characteristic differed between the groups.

The social stress of being short and problems in psychosocial adjustment

More than half of the 522 children and adolescents (4 to 18 years) in one study based in a pediatric endocrinology clinic were teased about their height weekly, on average.[11] Experiences of juvenilization were also frequently reported. It is commonly assumed that there is a relationship between these negative social experiences and the level of psychological adaptation. If the influence of the child's demographic background was controlled for, the variable "teased" was a statistically significant predictor of increased emotional problems. Because of the large sample size and the high statistical power to detect even small differences in this study, it is important to look beyond P values and consider effect size. The proportion of unique variance in problem scores attributable to teasing was rather small, about 2%. This proportion increases when the frequency of teasing is taken into account: those participants who were teased more often had more problems, and the effect size was between 4% and 5%. Juvenilization, acting independently, combined with teasing to exert a negative influence on psychosocial adaptation. To interpret the clinical significance of these effects, they must be evaluated in the context of the overall level of adaptive and maladaptive functioning in this sample. The reports of both parents and children of the psychological adaptation by short youths were generally comparable to community norms.[2,11] Thus, stresses relating to height may contribute to variability in adaptation that falls within the normal range.

Increases in growth and height induced by therapy and improved psychological adaptation

Only one controlled trial has examined the behavior of short children who were not deficient in growth hormone but had been treated with it.[15] Participants were 12 to13 years old at the time of follow up. After 5 years of growth hormone treatment, 15 children (of 21 who had started) remained in the clinical trial. This group increased in relative height from 2.4 standard deviations below the mean at the start of the trial to 1.2 standard deviations below the mean at follow up. The average height of the 13 short

children who had been randomly assigned to receive no treatment remained virtually the same (changing from 2.5 standard deviations below the mean at the start to 2.4 standard deviations at follow up). Classmates of average height were also included in the analysis. Across all behavioral measures, there were no significant differences between any of the groups at recruitment or after 3 and 5 years of treatment. Although more studies are needed, it can be tentatively assumed that growth hormone therapy is not associated with changes in behavior during childhood or early adolescence. A study of short adults without growth hormone deficiency who had previously been treated with growth hormone also failed to identify a psychological benefit from treatment.[16]

CONCLUSIONS

Healthcare professionals are being asked to make judgments about treatments using cost-utility analyses.[17] Growth hormone therapy is expensive (about $25,000 per year for a child weighing 36 kg [80 pounds]).[7] Although it is generally safe, side effects might occur in children who do not have a deficiency and who are treated at doses that are higher than those used for patients with growth hormone deficiency.[18] Less often considered on the cost side is the possibility of negative psychological effects from treatment. Expectations of increased height may outstrip what is generally possible and cause frustration and disappointment (Hunt MA, Hazen RA, Sandberg DE, unpublished data).[19]

Is growth hormone therapy useful? Short stature is not a disease, so objective studies of the effectiveness of treatment with growth hormone in youths with sufficient growth hormone are only partially useful in establishing utility.[7,20] The psychosocial morbidity associated with being short is assumed to be more substantial than the data summarized here would seem to indicate. The preference or value that the patient (and often the parents) ascribes to being taller is what becomes important. The types of behavioral studies summarized here are not directly applicable to children who conclude, or whose parents' believe, that their experiences and lifestyle will be hampered by being short. In such cases, clinical management would be facilitated by providing a thorough psychosocial evaluation of the specific stressors experienced by the child. Because of the salience of short stature, clinicians must be watchful of a process of misattribution on the part of the child, parents, or others that may distract attention from other stresses and problems in the child's life and from prescribing effective psychosocial interventions for problems of maladaptive coping.

Identifying adaptive coping strategies as an alternative, or adjunct, to growth hormone therapy should be an additional goal of such an evaluation. Gathering such detailed information is important because patients who are not deficient in growth hormone but are treated with it will reach adults heights that are still below average and in many cases are not significantly different from the predicted adult height.[7,16,20] In the pediatric endocrine clinic at our hospital, all families bringing their child for an evaluation of short stature receive a brochure on the medical and psychosocial aspects of short stature as part of the routine psychosocial assessment. The guide includes information on practical strategies for coping with being short and for achieving independence both inside and outside the home.[21] The efficacy of this particular strategy has not been empirically tested but an intervention using cognitive behavioral techniques has shown promise.[22]

The psychosocial evaluation should be provided by a mental health professional knowledgeable about the specific psychosocial problems of short stature as well as the medical issues involved. Ideally, this person would be a member of the clinical management team in the pediatric endocrinology clinic. Parents of young children are often concerned about their child's future psychosocial adjustment even if the child currently seems to have adapted successfully. The team member conducting the assessment can offer anticipatory guidance to patients and families, reassuring them that being short does not have to limit their child's happiness in the near term or the child's potential to be productive and successful as an adult. The clinician can confidently state that most healthy short children and adolescents do as well, psychologically and academically, as people of average height. Pediatricians and pediatric endocrinologists can counter negative stereotypes attributed to short stature in our society. The goal is to allay unfounded parental concerns which may be interpreted by the child as evidence that there is something wrong.

And what of those cases in which an informed decision, based on all medical and psychosocial variables, is made to treat the child with growth hormone? These patients and families would still benefit (and adherence to the medical regimen would be improved) by being prepared for the treatment and warned against having unrealistic expectations. A description of such a preparatory protocol is reported elsewhere.[19]

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Medical complications occurring in adolescents with anorexia nervosa

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Adolescence is a period of psychosocial change that is often perplexing for both teens and their parents. The rapid physical changes that occur at this time lead adolescents to become preoccupied with their body image. Adolescents may become preoccupied with themselves, uncertain about their appearance, compare their bodies with those of other teens, and become increasingly interested in sexual anatomy and physiology.[1] Anorexia nervosa is an eating disorder that disproportionately affects adolescents and has its origin, at least partially, in this preoccupation with body image.

Summary points

- Anorexia nervosa has its peak incidence in adolescence
- Effective treatments are available
- Serious endocrine and cardiovascular complications are associated with anorexia nervosa, as are gastrointestinal and dermatological complications
- There is frequently an overlap between athletics and anorexia nervosa in adolescents, which increases the potential for morbidity and mortality
- Many of the dangerous complications of anorexia nervosa develop during the refeeding phase; close medical monitoring is prudent during the early stages of weight restoration

DEFINITION

Anorexia nervosa is an eating disorder characterized by a fierce quest for thinness. The *Diagnostic and Statistical Manual of Mental Disorders,* fourth edition, defines patients with anorexia nervosa as having an intense fear of gaining weight, putting undue influence on body shape or weight for self-image, having a body weight which is less than 85% of the weight that would be predicted, and missing at least three consecutive menstrual periods.[2]

METHODS

Evidence presented in this review was culled from reference sources identified from a MEDLINE current literature search.

INCIDENCE AND PREVALENCE

Anorexia nervosa most commonly occurs in teenage girls, although boys are also affected, especially in the prepubertal age group. The ratio of girls to boys is approximately 10-20:1.[3] About 2% to 3% of young women have anorexia nervosa or a clinically important variant of the disorder.[4] There has been a consistent increase in the incidence of anorexia nervosa over the past 10 years.[5] The variable performance of questionnaires designed to screen for eating disorders, such as the Eating Attitudes Test and

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the Eating Disorders Inventory, coupled with the difficulty of defining cases and the tendency of patients to hide their illness has made epidemiological studies difficult.[6-8] Hsu, in a review of 24 epidemiological studies, reported a prevalence of pure anorexia nervosa of 0.5% in young women in Western cultures.[6] Reviewing selective studies of case registries, Hsu found that the annual incidence ranged from 14.1 cases/100,000 girls and women aged 10-24 to 43 cases/100,000 girls and women aged 16-24.

Dieting is a major risk factor for eating disorders. The prevalence of eating disorders in a culture parallels the prevalence of dieting behavior.[4] In non-Western cultures, a low prevalence of both eating disorders and dieting exists, although adolescents of all races who belong to higher socioeconomic groups are at an increased risk. Studies have confirmed that white women in higher socioeconomic classes diet more and are more concerned about their weight than other subgroups of women.[6] Participation in hobbies and occupations, such as modeling and ballet, that promote the ideal of thinness seems to lead to a higher prevalence of eating disorders.[3] Fairburn, in a study of putative risk factors for anorexia nervosa, concluded that perfectionism and negative self-evaluation are common antecedents of both anorexia nervosa and bulimia nervosa.[9] This study also suggested that a genetic association with parental eating disorders, dieting by other family members, and negative comments made by other family members about body appearance were risk factors for anorexia nervosa. Other proposed risk factors include substance misuse, affective disorder, obsessive-compulsive disorder, dissatisfaction with body image, and stressful life events (see box).

PROGNOSTIC FACTORS AND OUTCOMES

Anorexia nervosa is associated with the highest mortality of all the psychiatric diseases. Crude mortality ranges from 5% to10%[10]; this increased mortality is most often caused by cardiovascular causes occurring secondary to emaciation. There is also an increased risk of suicide.[11] The standardized mortality ratio, or the number of deaths among a similar cohort without anorexia nervosa, ranges from 3.8 to 14.4.[11] About 50% of patients recover, 30% improve but continue to struggle with weight issues, and the remaining 20% do poorly. The best predictive factors for recovery are the percentage decrease from ideal body weight and the length of time the patient has been anorexic. For every 10% loss in ideal body weight there is an 18% increase in the risk of poor outcome.[12] Extreme amounts of compulsive exercise and a previous history of difficult social interactions have also been predictive of a poor outcome in an adolescent population.[13]

MEDICAL COMPLICATIONS

Most of the medical complications of anorexia nervosa are the direct result of weight loss and malnutrition. Patients typically complain of intolerance to the cold, dry skin, and

Clues to the existence of anorexia nervosa

- Unexplained weight loss, especially in adolescents
- Failure to gain weight in proportion to height
- Secondary amenorrhea in adolescents or preadolescents
- Participation in hobbies or sports promoting or requiring weight loss (for example, ballet or wrestling)
- Preoccupation with losing additional weight or preoccupation with changing body shape despite thinness
- Low triiodothyronine concentrations and low luteinizing hormone concentrations (however, be sure to differentiate from low luteinizing hormone during normal menstrual cycles)
- Feeling cold compared to peers (often with objective hypothermia)
- Hair loss
- Development of lanugo hair (fine, downy hair on face and back)
- Refusing to eat with others.
- Eating slowly and cutting food into small portions
- Eating at odd times

brittle hair and nails. Patients also grow fine, downy hair, known as lanugo hair, on the sides of the face, arms, and back. This is not a sign of masculinization but probably represents an attempt by the body to conserve heat. Patients often have impaired thermoregulation and acrocyanosis of their hands and feet. Laboratory tests are generally normal in patients with anorexia nervosa who do not engage in any purging behaviors until the most severe stages of the illness. Clinically insignificant leukopenia and anemia occur occasionally.[14] The patient can be reassured and encouraged that all of these changes will be reversed when weight is regained.[15] For the primary care physician these changes should not raise much concern.

Gastrointestinal problems

The gastrointestinal tract is a common source of complaints. Most patients with anorexia have a prolongation of gastrointestinal transit time. This causes complaints of abdominal bloating and constipation. Adolescent patients are bothered by these symptoms and often attribute them to food and being fat, which perpetuates their avoidance of food and may precipitate purging behaviors. The constipation is caused by reflex hypofunctioning of the colon due to lack of intake.[16] Encouraging patients to eat smaller meals more frequently, educating them about the cause of these symptoms, and reassuring them that they will resolve over 2 to 3 weeks with regular eating, along with prescribing prokinetic agents, such as cisapride, seem to be beneficial in facilitating the refeeding process. Caution must be observed when this drug in used in treating anorexia nervosa because it can prolong the QT interval, a complication which can occur independently of drug treatment in these patients.

Endocrine problems

For adolescents with anorexia nervosa, the endocrine changes that may occur pose the most danger in the long term if they are not appropriately treated. Amenorrhea is a cardinal manifestation of anorexia nervosa, and it can be either primary or secondary. Puberty may be delayed in adolescents because of a reduction in pulsatile gonadotropin-releasing hormone from the hypothalamus resulting in low serum concentrations of estradiol. About 20% of patients with anorexia nervosa experience amenorrhea before the onset of weight loss. Resumption of menses generally occurs when the patients weigh about 90% of their ideal body weight but amenorrhea may persist when there is a low percentage of body fat or there are unresolved emotional issues.[17]

Amenorrhea is an important risk factor for severe osteoporosis. The prevention of osteoporosis is one of the main challenges for primary care physicians. It is at adolescence that most of a person's peak bone mass is acquired.[18] Adolescent patients with anorexia nervosa are therefore less likely to reach their peak bone density and are at risk of premature osteoporosis and fractures, as well

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as being at risk of irreversibly stunting their growth.[1, 19] Most studies have noted supplementation with estrogen to be protective against osteoporosis in anorexia nervosa.[20] This is presumably due to the inability of estrogen replacement therapy to correct other factors assumed to be involved in premature osteoporosis, such as hypercortisolism. The long-term outcome of osteopenia in anorexia nervosa has only recently been elucidated. Trabecular bone seems to be less affected than cortical bone. Studies show that despite the resumption of menses and weight gain, cortical bone mineral density does not return to normal.[21]

Primary care physicians might use densitometry periodically to assess the bone mineral density of adolescents with anorexia nervosa. If osteopenia is detected, early and aggressive attention must be directed toward preventing the pernicious development of further bone loss and osteoporosis. Restoring body weight and resuming menses should be the goals. High-dose calcium (1500 mg/day) and vitamin D (800 IU/day) supplements are important, especially given the possible role of excess cortisol in osteoporosis in anorexia nervosa. In addition, although there is little scientific data to support the use of estrogen alone to attenuate bone loss, it should not be completely ruled out. If, despite these interventions, there is evidence of progressive bone loss, bisphosphonate therapy, with alendronate, should be considered, especially since it has proven efficacy in treating osteoporosis induced by steroids.[22] The bone loss associated with anorexia nervosa is profound and occurs early in the course of the illness; it causes premature fractures, and once it is established, it is difficult to restore skeletal integrity.

Other minor endocrine changes seen with anorexia nervosa are the euthyroid sick syndrome manifested by low serum triiodothyronine concentrations, increased reverse triiodothyronine concentrations, and normal concentrations of thyroid stimulating hormone. These adaptive changes are made to conserve calories and should not be treated with thyroid hormone. Diabetes insipidus with reduced concentrating capacity and hyponatremia has also been described. Hypoglycemia is common among adolescent patients; it is usually asymptomatic until the disease is severe. Then, hypoglycemia may become more marked and indicative of a poorer overall prognosis.

Cardiovascular problems

Most deaths in adolescent patients with anorexia nervosa are caused by cardiovascular collapse, which occurs secondary to malnutrition and emaciation. With progressive weight loss there is a decrease in left ventricular mass and stroke volume. As a result, maximal work capacity is markedly diminished.[23] In addition, there is an increased incidence of sudden death. This is presumably a result of autonomic imbalance, a prolonged QT interval, and arrhythmias related to electrolyte abnormalities (especially if patients are purging themselves). Postmortem studies in cases with anorexia have not identified serious atherosclerosis.[24] Primary care physicians must be cautious about prescribing any drugs that can prolong the QT interval.

Although bradycardia and hypotension are consistently found in these patients, they are generally benign and related to a reduction in the basal metabolic rate as the body tries to save energy. Thus, these are physiological changes and should not be treated. However, heart rates of less than 30 to 35 beats/minute need to be evaluated and monitored.

A potentially catastrophic syndrome referred to as the refeeding syndrome is related to these cardiac changes. Classically, this refers to severe hypophosphatemia and the inherent complications that develop when any severely malnourished person is refed. Phosphate depletion produces widespread abnormalities at the cellular level mainly due to depletion of compounds such as adenosine triphosphate. This depresses the cardiac stroke volume, which in the setting of a repleted circulatory volume, can promote congestive heart failure. This syndrome is preventable as long as refeeding is started slowly and caloric increases are modest during the first 2 to 3 weeks of refeeding. Checking serum electrolytes and phosphorus concentrations every 2 to 3 days can reduce the risk of these problems. Monitoring the patient's pulse for unexpected increases and checking for edema are important parts of the refeeding treatment plan (see box).[25]

ATHLETICS AND ANOREXIA

Anorexia nervosa is not uncommon among competitive athletes. Primary care clinicians who treat adolescent patients must remember that their primary obligation is to the athlete and not to the success of the athletic department. For the adolescent with anorexia who has amenorrhea there are no definite guidelines for safely participating in sports. Any athlete who has anorexia and is found to

Strategies to avoid refeeding syndrome

- Identify patients at risk (for example, any patient who is chronically malnourished or who has not eaten for 7-10 days)
- Measure serum electrolyte concentrations and correct abnormalities before refeeding
- Obtain serum chemistry values every other day for the first 7-10 days, then weekly during remainder of refeeding
- Attempt to slowly increase daily caloric intake by 200 to 300 kcal every 3-4 days until caloric intake is adequate
- Monitor patient carefully for development of tachycardia and edema

have a potentially lethal cardiovascular abnormality, including a prolonged QT interval, should be banned from competitive sports regardless of the athlete's willingness to waive liability.[26] Certainly, measurements of bone mineral density should be considered since different sports are associated with varying degrees of risk for fractures. Athletic training in combination with the excessive exercising which is often found in these patients can result in additional weight loss and significant medical morbidity and even mortality.

TREATMENT

Discussion of the many different treatment modalities used in anorexia nervosa is beyond the scope of this paper. Family counseling is valuable especially for patients younger than 18 years. Weight gain must be closely linked to a program of psychotherapy: one without the other is unlikely to be successful regardless of how much patients with anorexia would like to participate in psychotherapy without regaining weight. Psychotherapeutic approaches are often indicated.[27] In general, medications are more effective in treating bulimia than anorexia nervosa. Although most adolescent patients with anorexia can be treated as outpatients, inpatient treatment is recommended in certain situations. Hospitalization is recommended for patients whose weight loss has been rapid or who have lost more than 25%-30% of their ideal body weight, as well as for those with cardiovascular arrhythmias.[28] Lastly, patients with anorexia nervosa who are more than 20% below their ideal body weight or who have cardiovascular abnormalities should be referred to a specialist who regularly treats patients with anorexia nervosa.

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CORRECTION

The correct author order for the Original Research article on p 16 of the January issue of wjm is Karen H Seal, Kristen C Ochoa, Judith A Hahn, Jacqueline P Tulsky, Brian R Edlin, and Andrew R Moss.

Outpatient management of children with diabetes

DIABETES: don't immediately admit before evaluating the entire situation

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There is controversy over whether it is necessary to hospitalize all children who have been newly diagnosed with diabetes mellitus. During the past decade, there has been a fundamental shift from inpatient management to outpatient management of these patients. Outpatient education and management of children who have been recently diagnosed with type 1 diabetes mellitus have been shown to be as safe and effective as inpatient treatment. Long-term glycemic control, as measured by longitudinal glycohemoglobin values, has been shown to be similar both in children who have undergone initial management as inpatients and in those who were initially treated as outpatients.[1] In addition, a significant percentage of children who were managed as outpatients at the time of diagnosis subsequently had lower rates of hospitalization and ketoacidosis than those children who had received inpatient care.[2] The concept that all children who have recently been diagnosed with type 1 diabetes need to be immediately admitted to the hospital must be revisited. Guidelines for the initial management of children with type 2 diabetes have not yet been developed. This article reviews the presentation, etiology, and outpatient management of children who have recently been diagnosed with diabetes mellitus.

Summary points

- Type 1 diabetes is a destructive, autoimmune process; it is cell mediated, involves the pancreatic islets, and causes insulinopenia
- Type 2 diabetes results from insulin resistance and causes a secondary reduction in insulin secretion
- Most children with type 1 diabetes are white, thin, and present with polyuria, polydipsia, and weight loss; biochemical and clinical evidence of ketoacidosis less often present than previously presumed
- Most children with type 2 diabetes are overweight, belong to ethnic minority groups, have a family history of the disease, and have acanthosis nigricans, a cutaneous marker of insulin resistance
- One venous puncture can be used for all laboratory tests: measuring electrolytes and concentrations of insulin or C peptide, serum glucose, autoantibodies to islet cells, thyroid stimulating hormone, and antithyroid antibodies
- Children recently diagnosed with diabetes can be managed as outpatients if they do not have significant abnormalities in electrolytes or acid-base state and are adequately hydrated

METHODS

This article reflects our clinical practice and is amplified by reviews of the latest literature, culled from MEDLINE. Search terms included diabetes, child and diabetes, adolescent with outpatient, laboratory analysis, classification, etiology, definition, and symptoms. There are no relevant references on this subject available in the Cochrane database.

PRESENTATION

Sustained hyperglycemia produces an increase in serum osmolality and glycosuria, which together lead to water loss by the kidneys. These osmotic changes result in polydipsia, polyuria, nocturnal frequency, and, often, secondary enuresis. Polyphagia (increased appetite) may occur as an attempt by the body to compensate for ongoing catabolism. Blurred vision may result from the reduction of glucose to sorbitol and its subsequent deposition in the lens of the eye, causing reversible osmotic swelling.

Children with type 1 diabetes lose weight through a combination of progressive water loss and catabolism. Lipolysis occurs secondary to insulin deficiency and leads to the production of acetone, which manifests as a fruity odor on the breath. When this occurs, these children are at risk for dehydration. Acute, life-threatening presentations include severe ketoacidosis and arrhythmia, ileus, nausea, vomiting, and abdominal pain. Deep, rapid breathing (Kussmaul respirations) may occur as the body attempts to excrete carbon dioxide through the lungs to compensate for metabolic acidosis occurring as a result of the build up of ketoacids and lactic acid.[3]

Presenting symptoms in children with type 2 diabetes mellitus also include polydipsia and polyuria but usually there is no weight loss. Such patients can also present occasionally with symptoms of florid ketoacidosis similar to that seen in children with type 1 diabetes.

Polyuria and polydipsia are the most common presenting features in children who have recently been diagnosed with diabetes mellitus. Weight loss occurs in only 35%, biochemical evidence of ketoacidosis in 25%, and 5% of patients will be comatose. Younger children tend to present with the most severe symptoms. Thus, when a family notes excessive urination, secondary bedwetting, or increased thirst in a child, a search for diabetes mellitus by a primary care physician should ensue. Occasionally, glycosuria is first detected serendipitously in a child during a routine urine analysis.

ETIOLOGY

Type 1 diabetes results from insulin deficiency occurring secondary to cell-mediated autoimmune destruction of the β cells within the islets of the pancreas. There are many genetic factors associated with a predisposition to this autoimmune destruction; it is also related to environmental factors, which are still poorly defined. The known genetic link has been shown to involve alleles that contain regions that control the immune response. The ways in which environmental factors such as drugs, medications, cow's milk, or viruses interact with these genetic risk factors are not understood, and these interactions continue to be debated.[4] Markers of the destruction of β cells by the immune system include the presence of autoantibodies to islet cells, insulin, glutamic acid decarboxylase, and tyrosine phosphatases. Autoantibodies to islet cells are present in the serum of 60% to 90% of patients newly diagnosed with type 1 diabetes. None of these autoantibodies is believed to contribute to the destruction of β cells; it is thought to be mediated by T-cells. The autoantibodies are simply markers for the disease and are used to assist in the detection of the prediabetic state in family members of patients known to have type 1 diabetes.[5]

The pathophysiology of type 2 diabetes is characterized by primary peripheral insulin resistance with secondary overproduction of hepatic glucose and declining β cell function. Although the specific etiology of this form of diabetes is not known, autoimmunity does not occur. Like their adult counterparts, most children with type 2 diabetes are overweight. The risk of type 2 diabetes mellitus is heightened in people who are not necessarily obese but who have an increased percentage of abdominal body fat. As many as 15% to 20% of all children who are newly diagnosed with diabetes have type 2 diabetes; many are children from Hispanic, African American, and Native American populations. Familial aggregations (especially among females) predominate in this form of the disease. Concordance in identical twins in some studies approaches 100%.[3] However, the genetics of this type of diabetes is complex and not clearly defined.[2]

DIAGNOSIS

Differentiating between the two types of diabetes can be problematic. Children with type 1 diabetes are typically white, thin, and present with polyuria, polydipsia, and weight loss; biochemical or clinical evidence, or both, of frank ketoacidosis occurs less commonly. However, children with type 2 diabetes may also have ketoacidosis if severe hyperglycemia, resulting from the effects of insulin resistance, exerts a toxic effect on the capacity of β cells to produce insulin.

Because of the variability in the presentation of each type of diabetes, the presence of type 1 diabetes is often differentiated by the detection of autoantibodies (markers of immune destruction) in the serum. Accordingly, at the time of the onset of the disease, we recommend drawing blood to test for the presence of autoantibodies to islet cells or glutamic acid decarboxylase along with simultaneous monitoring of concentrations of insulin (or C peptide if insulin treatment has been initiated) and glucose. Additionally, we recommend measuring concentrations of antithyroid antibodies (or, more specifically, antithyroperoxidase and antithyroglobulin antibodies) and the serum concentration of thyroid stimulating hormone to detect Hashimoto's thyroiditis in children with type 1 diabetes, 20% of whom are at risk for this disorder. The presence of thyroid autoimmunity may be useful as indirect evidence of type 1 diabetes.

The diagnosis of type 2 diabetes is most likely if the serum concentration of insulin or C peptide is raised, there is hyperglycemia, tests for autoantibodies are negative, and there is a family history of adult-onset diabetes. Clinically, these children are usually obese and have varying degrees of acanthosis nigricans, a lesion affecting the skin in flexural areas of the body, such as the axilla, nape of the neck, and the groin. The skin becomes thickened, roughened, darkened, and tags may develop. Nearly 40% of Native American adolescents, 13% of African American, 6% of Hispanic, and <1% of white adolescents have acanthosis nigricans that is clinically apparent. This skin lesion is a clinical surrogate of insulin resistance and a risk factor for type 2 diabetes.[6]

To hospitalize or not?

Don't
Immediately
Admit
Before
Evaluating
The
Entire
Situation

Role of the primary care physician

The primary care physician is invariably the first to identify and diagnose children with diabetes mellitus. If glycosuria is found serendipitously serum glucose concentrations should be measured immediately. If hyperglycemia is equivocal on random testing, a repeat serum glucose test should be obtained two hours after a meal containing a high level of glucose. A fasting blood glucose concentration should not be used because it may be misleading in the early stages of diabetes, giving a falsely normal result. The next step is to obtain serum concentrations of elec-

trolytes, blood urea nitrogen, glucose, ketones, insulin (or C peptide) with glucose, islet-cell autoantibodies, antithyroid antibodies, and thyroid stimulating hormone. If it is necessary to accurately evaluate the acid-base state of a child, a venous blood gas measurement should be obtained; the mean difference between arterial and venous pH values is minimal.[7] Oxygenation is rarely a problem in patients with ketoacidosis, so an arterial blood gas measurement is rarely needed. Thus, only one venous puncture is needed for all laboratory tests. A glycosylated hemoglobin test is optional; the result will not change the initial course of management but it may give an indication of the duration or severity of the disease process.

After reviewing the initial clinical and laboratory data, the primary care physician must decide whether to immediately send the child to the endocrinologist's office or wait until the next day. Children can wait 24 hours before being seen by a pediatric endocrinologist if they seem well, if laboratory values do not identify a significant electrolyte or acid-base abnormality, and if they are adequately hydrated and can remain so on oral fluids until they are seen. Immediate and mandatory admission to the hospital should only occur in children in whom there is severe acidosis (serum bicarbonate value $\leq$10 mmol/L, altered mental status, recurrent vomiting, severe dehydration, or if there will be difficulty in ensuring adequate follow up, there are significant pre-existing social problems in the household, an unusually high level of anxiety in the family, or if the child is younger than 2 years.

OUTPATIENT MANAGEMENT

If the criteria previously listed are present then it is safe to manage the child as an outpatient. Differentiation between the two types of diabetes should be attempted on clinical and biochemical grounds. If the child meets the criteria for management as an outpatient, neither an intravenous insulin bolus nor a parenteral fluid challenge is required.

The disease process has probably been occurring over a long period but the symptoms are just becoming apparent. The child should be encouraged to drink sugarless fluids in the 24 hours before seeing the pediatric endocrinologist. The family should also change to a meal plan that excludes concentrated sugars.

This management will limit further loss of water and electrolytes, decrease hyperglycemia, and help to maintain appropriate acid-base state. Families should also be counseled to call immediately if the child vomits or develops an altered mental status.

Outpatient management by a pediatric diabetes team should begin within 24 hours; the team should consist of a physician, nurse specialist, dietitian, and psychologist. The physician should discuss the causes of diabetes, normal and abnormal glucose metabolism, signs and symptoms of hyperglycemia and hypoglycemia, and the rationale for treatment. The nurse specialist should instruct the patient and family about the technical aspects of monitoring blood glucose concentrations and administering medication.

The dietitian should create a meal plan and review the principles of counting carbohydrates. Lastly, the psychologist should assist the child and family in coping with the diagnosis. Once the patient is sent home from the office, close telephone contact with either the nurse specialist or the endocrinologist should be maintained for several weeks to ensure that the family understands and is adhering to the treatment plan. Follow-up office visits are usually scheduled for one week later, one month later, and then quarterly.

CONCLUSION

During the past decade, the concept that all children who have recently been diagnosed with type 1 diabetes need to be hospitalized immediately has been challenged. The alarming increase in the number of adolescents diagnosed with type 2 diabetes mellitus requires a broader understanding of the initial diagnostic criteria, which may necessitate additional laboratory evaluation at the time of presentation.

Further, the initial evaluation of the patient who has recently been diagnosed with diabetes should include an assessment of the degree of dehydration and acidosis to help decide whether initial education and management as an inpatient or outpatient is suitable. Outpatient education and management of diabetes has been proven to be cost effective, safe, and efficacious.[1, 2] A mnemonic for remembering this is: don't immediately admit before evaluating the entire situation.

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Helping teens who live in violent communities

The murders of children and adolescents, such as the shootings that occurred in schools in Colorado and Oregon, have a lasting impact on the families of the victims and on the nation. In 1998, 4205 children and adolescents were killed by guns.[1] Thousands of other teens were stabbed, assaulted, or shot. These violent events leave victims, their friends and neighbors, and witnesses, at high risk of developing psychological difficulties, particularly post-traumatic stress disorder.[2-5] Support from a caring adult can act as a buffer against the effects of such exposure.[6,7] Physicians can provide this support by identifying teens who may have been exposed to violence and by intervening to reduce the risk of post-traumatic stress disorder and other complications.

Summary points

- 4205 children and adolescents were killed by guns in 1998, and thousands of other teens were stabbed, assaulted, or shot
- Violence leaves victims, their friends and neighbors, and witnesses, at high risk of developing post-traumatic stress disorder
- Physicians can act as a buffer against the effects of violence in communities by identifying affected teens and intervening
- Physicians can help adolescents living in violent communities change their lives by talking directly with them about violence empathetically sympathetically and by working with members of the teen's existing support system

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BARRIERS TO ASSESSING AND TREATING EXPOSURE TO VIOLENCE

Many factors stop physicians from adequately assessing and intervening to help teens who may have been exposed to violence. Directors of pediatric residencies and training programs in adolescent medicine identify "violence and weapon carrying" as one of the most poorly covered topics in rotations in adolescent medicine.[8] Many physicians feel ill prepared to tackle this issue. Many find it hard to believe how many families own guns. Experiencing violence is associated with ease of access to guns at home.[9] However, one study found that although physicians reported that they thought they should discuss gun ownership with parents, most believed that their patients' families did not own guns.[10] Only 11% of the parents in this study reported that their child's physician had discussed gun ownership with them, even though 28% actually owned guns.

Physicians may find it hard to identify teens who have been exposed to violence because the symptoms of psychological distress may be obscured by psychological numbing, denial, and the fact that chronic exposure to violence may have shaped many aspects of an adolescent's personality.[2,11] Sociocultural factors, such as biased belief systems, may influence whether any psychological interventions are offered to victims of violence. In a study of adolescents in hospital, victims of shootings, stabbings, and physical assaults were offered significantly fewer psychosocial interventions, such as follow-up psychotherapy, than patients who had tried to commit suicide.[12]

CLASSIFICATION OF EXPOSURE TO VIOLENCE

Homicide is the second most common cause of death among young people aged 15 to 24.[13] Other types of exposure to violence can also have severe and lasting influences on young people. Exposure can be direct and nonfatal and can include being shot at, stabbed, or robbed. Witnessing violence can also have an effect. Between 75% and 91% of children and adolescents in neighborhoods that have moderately high levels of community violence will witness an incident of violence, such as a shooting or an assault.[3,4,14-16] Vicarious exposure occurs when someone the adolescent knows dies as a result of violence or when the adolescent's sense of safety is threatened by learning of a violent event in school or the neighborhood. For example, nearly half of the 250 adolescents in one study knew someone who had been taken away by the police, and over one third knew someone who had been shot or shot at. Although domestic violence and child abuse are important causes of violence in the lives of teens, this paper focuses on violence in the community. Neighborhoods considered to have high levels of community violence are those in which violence intrudes into teens' everyday lives, such as when teens regularly hear gunfire, see or hear of shootings or knifings, and witness beatings.

CONSEQUENCES OF EXPOSURE TO COMMUNITY VIOLENCE

Exposure to violence in the community is directly related to emotional distress.[2-6,11] In areas with high levels of community violence, as many as 58% of adolescents can be diagnosed with post-traumatic stress disorder.[2,17] The *Diagnostic and Statistical Manual of Mental Disorders,* fourth edition, is useful in diagnosing post-traumatic stress disorder, although its use is controversial in the assessment of adolescent patients.[18] The criteria require that a distinct event initiated the symptoms; this event may be difficult for teens to pinpoint if they live in violent communities. Terr's classification of type trauma (longstanding or re-

peated exposure to multiple events) may fits these teens better than does type I trauma (unanticipated single events).[2,19] Post-traumatic stress disorder may manifest differently in adolescents exposed to type II (chronic) trauma than type I (acute) trauma.[2,19] Victims of an acute event may manifest the full syndrome but those with more chronic exposure typically experience anger, despair, psychic numbing, dissociation, and changes in personality. The symptoms of post-traumatic stress disorder may vary over time.[2,11]

Violence may have different effects depending on the developmental stage of the child at the time of each exposure.[2-6,11] For example, a child who experienced violence as an infant may have difficulties developing secure relationships; as a toddler the child might have problems with toileting and developing speech. Teens who have been exposed to violence as children typically have difficulties achieving a strong sense of self-efficacy, experience somatic complaints and sleep disturbances, and find it difficult to regulate their emotions. In adolescents who have been exposed to chronic violence, these problems, which are associated with post-traumatic stress disorder, may mimic other disorders. Teens may show signs of attention deficit hyperactivity disorder, learned helplessness, hopelessness about the future, and emotional numbing. Teens often cope with post-traumatic numbing by engaging in risk-taking behaviors, such as using alcohol, having sex with numerous partners, and developing gang affiliations.[20,21]

Although diagnosing the disorder is complex, the American Academy of Child and Adolescent Psychiatry recommends that teens be offered psychological services, even if they do not fully meet the criteria for a diagnosis of post-traumatic stress disorder, if their symptoms interfere with at least one area of their life.[11] Teens living in neighborhoods considered highly violent can be assumed to have had chronic exposure to violence, and other problems, such as failing in school and engaging in risk-taking behaviors, are likely to be related to post-traumatic stress disorder.[2]

FACTORS THAT PROMOTE RESILIENCE

Large longitudinal studies have shown that living in poverty, having high levels of stress, and being maltreated place children at high risk of social, emotional, and behavioral maladjustment.[22] Some researchers have looked at the factors that protect the "resilient" children who emerge well adjusted from exposure to these stresses.[23] Bronfenbrenner's bioecological model categorizes these factors as individual, family, or community characteristics.[24] Characteristics of the individual that have been associated with positive outcomes include intelligence; involvement in academic and extracurricular activities; and personality characteristics such as having a well developed sense of self, appropriate coping skills, an internal locus of control, strong social skills, flexibility, a sense of humor, empathy, and optimism about the future.[6,9,25-28] Family characteristics include having parents who serve as buffers against a stressful environment by providing stability, supervision, and warm, empathic care.[9,14,25,27,29-31] In the community, some teens form bonds with caring adults, such as teachers, church members, or relatives, and such bonds can ameliorate the effects of chronic stress.[6,7,25]

Assessing the impact of violence: the ViPER mnemonic

Violence exposure: amount and type

Presence of weapons in the home

Emotional sequelae for the adolescent (symptoms of post-traumatic stress disorder)

Resources and support available

ASSESSMENT

Four important areas to consider in assessing a teen's exposure to violence in the community can be summarized by the mnemonic ViPER (box). After carefully considering the research evidence, we derived the ViPER mnemonic to help busy primary care physicians remember four crucial areas to assess. Research on violence exposure[2-5] guided our focus on violence subtypes and emotional sequelae (PTSD), while findings from the excellent longitudinal studies on resilience,[22] such as the Kauai and Rochester studies, led us to include resources and support. We added weapon possession in response to the public health approach to violence which has been supported by subsequent psychological research.[10,29] It is important to introduce the topic of violence and normalize it to help adolescents discuss issues that they may not think are related to their health. In addition to asking specific questions, physicians can use standardized measures of exposure and post-traumatic stress disorder.[32,33] Initiating a discussion about violence during each visit increases the likelihood that the adolescent will reveal information on subsequent visits.[34]

An example of a possible lead-in might be: "Before we finish today, I wanted to see if anything was going on in your life that might be affecting your health. Many of my teenage patients have seen or experienced frightening or violent things in their neighborhoods or schools. Most of the time these things affect people in ways they don't even realize. For example, people can lose sleep because of nightmares or they can find it hard to concentrate on school. Other times, people feel really angry or on edge. It happens all the time and, because we actually have some

ways to help teens in these situations, I'd like to take some time to talk with you about this."

Violence exposure: amount and types

It often helps to give examples to encourage a teen to talk about violence: "There are different kinds of violence that may affect teenagers. The first is direct exposure, like if someone is shot at or beaten up. The second kind that also affects teens is, for example, seeing a drive-by shooting or seeing someone get robbed. Even though the violence doesn't happen directly to you, you may have nightmares about it or worry about it happening to you. Sometimes people hear about something violent or scary happening to someone they know and even if they didn't see it, it is still frightening." Generally, teens who have experienced direct exposure have also witnessed violence and had vicarious exposure as well. It is helpful to reflect their feelings in an empathic way, such as by saying, "That sounds really terrifying," or "it seems it is hard to feel safe even at home."

Presence of weapons in the home

If the teenager reports that there are guns in the house, this should be explored further. Physicians could ask, "Where are the guns kept? Do you know how to get to them? Are they loaded? Locked up? Where are the bullets?" Parents often wrongly think that their children are unaware of the presence and location of weapons. If any of these questions are answered in the affirmative, physicians should help adolescents initiate an open discussion with their parents focusing on problem-solving about gun safety issues.

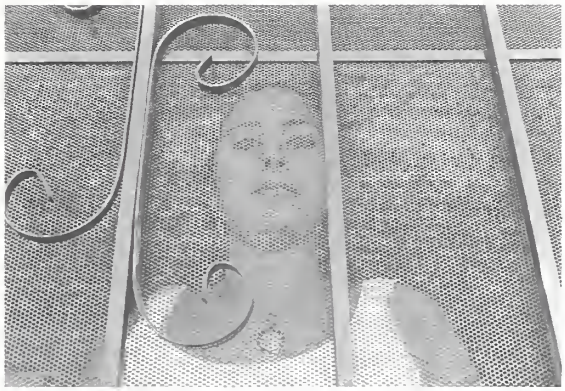
Emotional sequelae

Normalizing symptoms encourages disclosure. For example, physicians could say, "When people have experienced a lot of violent events in their lives, they may not even be aware of the ways these events affect them. There are some common reactions people have, and I'm wondering if you've noticed any of these things in yourself." Giving specific examples of the common reactions is helpful (box).

Adolescents who seem emotionally hardened may believe that violent events do not affect them. Such emotional numbing is the most common symptom of chronic exposure, and it should not be mistaken for a positive coping style.

Resources and support

Participating in school and other activities and communicating well with parents can be effective in protecting an adolescent against post-traumatic stress disorder. Of greatest importance, however, is helping the teen to identify a caring and stable adult who can provide support and intervene in the teen's life. The subject can be explored by saying something like, "Sometimes when things get really bad, it helps to have someone to talk with. Is there anyone you feel comfortable going to when you need help?" If there is no one, probing further may help. For example, physicians might say "Many teens who have experienced things like you have feel there is no one to help. Usually we can find at least one person. Let's think about your teachers, people you know from your church or neighborhood, and your relatives. Have you ever thought one of your teachers seemed like a nice person?"



S Beth Atkin *Voices from the Streets: young former gang members tell their stories*. Little, Brown; 1996

DEVELOPING A PLAN FOR INTERVENTION

Components of intervention

There are several crucial features of any intervention plan for treating post-traumatic stress disorder.[2,11] The direct exploration of violent events and their impact is a key component. To reduce the impact of a violent memory, teens must talk openly about the event in a safe setting and face the emotions associated with it. Parents or other supportive people, or both, should be included in the intervention if possible and if the teen wants them to be included. Several types of psychotherapy have been studied empirically, and no one therapy has emerged as the definitive treatment.[11] Similarly, no pharmacological intervention is effective and safe for adolescents, although studies are in progress.[11] Finally, symptoms of other disorders should be treated but not to the exclusion of treating the underlying symptoms of post-traumatic stress disorder.

Barriers to intervening

For teens living in violent communities, there may be numerous barriers to treatment. Many teens may be resistant to receiving treatment or not recognize that they need it because the exposure and their emotional response may have persisted for a long time. Others may feel that

Three most common reactions to violence

Avoiding traumatic stimuli (numbing)
- Experiencing emotional numbing
- Feeling cut-off from others
- Lacking enjoyment
- Having negative views of the future

Re-experiencing the trauma
- Having nightmares
- Having flashbacks
- Thinking constantly about the event
- Having bad memories

Feeling on edge
- Having trouble falling asleep or staying asleep
- Being irritable or easily angered
- Being distracted or inattentive
- Being easily startled

psychotherapy is stigmatizing. Individual psychotherapy may not even be available in communities with high levels of violence. Additionally, as teens continue to be exposed and "retraumatized," treatment gains may prove difficult to maintain. However, longitudinal studies have consistently shown the strong protective effect of a relationship between a teen and one interested and caring adult. Thus, if formal psychotherapy is not available or if the teen must stay in the dangerous environment, physicians can work with the teen's existing social support system to find an adult willing to meet regularly with the teen to discuss openly violent events and the teen's reactions. This adult should be encouraged to work with the teen to strengthen factors that promote resilience, such as getting involved in activities and focusing on the future.

CONCLUSION

Treating the consequences of the exposure to violence is complex. Nevertheless, by talking directly with adolescents about violence empathetically and by working with people in the teen's existing support system, caring physicians may be able to help adolescents in violent communities change the trajectory of their lives.

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Dysuria in adolescents

Dysuria is a frequent and often frustrating complaint of young women. Although it is tempting to equate dysuria with a urinary tract infection, special care must be taken in adolescents to rule out a sexually transmitted infection. Even with a careful history, the difficulty differentiating between a urinary tract infection and a sexually transmitted infection often forces physicians to subject patients to invasive exams and laboratory studies. Many young women receive their first pelvic exam when they experience dysuria; it costs the physician time and causes discomfort to the patient. A review of the literature yields more confusion than clarity regarding the reliability of pelvic exams, urine dipstick tests, and microscopic analysis. However, a few conclusions may be drawn from experience with these tests, and newer tests may make the treatment of adolescent girls with dysuria less daunting and more time and cost effective.

Summary points

- Dysuria in adolescent girls can be a symptom either of a urinary tract infection or a sexually transmitted infection
- The incidence of sexually transmitted infections is higher in sexually active adolescent women than in women in other age groups
- The consequences of pelvic inflammatory disease, a complication of untreated cervicitis, include chronic pain, infertility, and an increased risk of ectopic pregnancy
- A pelvic exam may be necessary if pelvic inflammatory disease is suspected but in certain situations a bimanual exam may be sufficient
- The discriminating use of laboratory tests may help physicians avoid invasive exams
- Treatment should be started while awaiting the results of confirmatory tests

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METHODS

The references chosen for this article were obtained by searching MEDLINE and MDConsult, as well as being discovered in the course of general reading. Additional information was provided by lectures given by specialists at UCLA in the adolescent medicine and emergency medicine and infectious disease departments.

WHAT PLACES ADOLESCENTS AT RISK OF SEXUALLY TRANSMITTED INFECTIONS?

Fifty-three percent of high school students have had at least one sexual encounter,[1] and 20.8% of 12th grade girls have had more than four sexual partners.[2] In 1995, just under half of all girls in high school had used condoms,[2] and the number decreased as girls progressed from 9th to 12th grade.[1,3] The risk factors associated with sexually transmitted infections such as choosing a partner whose health history is not determined, using drugs or alcohol with sexual activity, being young at the time of first consensual sexual encounter, having been incarcerated, having had a new partner within the preceding 2 months, and having a history of a similar infection are often difficult to elicit from an adolescent patient. Even when risky behaviors are controlled for, the incidence of chlamydia is twice as high among women aged 15-19 as among other age groups.[2] This is probably because susceptible columnar epithelium is present on the exocervix of adolescents; this changes to squamous epithelium as women reach their 20s. The prevalence of chlamydia among teenage women is 13%-26% and the prevalence of gonorrhea is 2%-10%. There is a 10%-40% chance that a teen will contract chlamydia again in the months after the initial diagnosis is made.[2,4]

WHAT ARE THE GOALS OF TREATMENT?

The appropriate treatment of a symptomatic infection, whether sexually transmitted or a urinary tract infection, should relieve a woman's discomfort and prevent undesirable complications. Treating a condition that has been transmitted to her by a partner and helping her to contact the partner may prevent future cases of sexually transmitted infection. Most importantly, 10%-40% of untreated gonorrheal or chlamydial infections will progress to pelvic inflammatory disease, a term describing the constellation of endometritis, tubo-ovarian abscess, salpingo-oophoritis, and pelvic peritonitis. Pelvic inflammatory disease is diagnosed in 1 million women annually.[5] Of these cases, 20% to 30% occur in adolescent girls, and one study found that sexually active adolescent girls have a 1 in 8 chance of contracting pelvic inflammatory disease in comparison with the 1 in 80 chance of contracting the disease that is found among sexually active women in other age groups.[3] The morbidity associated with one case of pelvic inflammatory disease is great: there is a 12% risk of infertility, an 18% chance of chronic pelvic pain,[6] and a sevenfold increase in the risk of ectopic pregnancy. The risk of infertility increases to 25% after two episodes and to >50% after three.[7] The annual cost of treating these complications is $4 billion to $5 billion.[8] Preventing the complications of pelvic inflammatory disease requires that sexually transmitted infections be diagnosed early.

ARE THERE SYMPTOMS THAT RELIABLY DIFFERENTIATE BETWEEN SEXUALLY TRANSMITTED INFECTIONS AND URINARY TRACT INFECTIONS?

The cliché that foul vaginal discharge can be treated with a shot of penicillin is an archaic view of sexually transmitted infections. Unfortunately, asymptomatic carriage of a sexually transmitted infection is so prevalent that many experts now recommend that all teens be routinely screened for these infections.[9] However, studies have been unsuccessful in identifying reliable indicators in women who have symptoms. Sexually transmitted infections can cause dysuria, with or without frequency, either from external lesions or by causing inflammation of the urethra, which is known as acute urethral syndrome.[7] Two emergency departments retrospectively reviewed presenting symptoms in women of all ages who later tested positive for chlamydia. At Wayne State University in Indiana, of 181 young women who tested positive for chlamydia, 61% complained of abdominal pain, 35% of vaginal discharge, 30% of vaginal bleeding, and 4% of dysuria.[10] Of 233 women who tested positive for chlamydia at Albany Medical College in New York, 18% had "urinary tract infection symptoms" but only 13% had vaginal discharge.[11] Many of these women did not initially receive appropriate antibiotic treatment.

Gonorrhea can cause symptoms that are similar to those of chlamydia or can present as proctitis (10%-30% of cases), an abscess of Bartholin's gland with pain and swelling over the labia minora, or as an abscess of Skene's gland with periurethral pain.[2] Roughly about 25% of adolescent girls with dysuria who are considered to be at high risk of contracting a sexually transmitted infection will have one; at one clinic 60% of women with dysuria had vaginitis. [12] In cases of acute urethral syndrome occurring secondary to candidal or trichomonal vaginitis, dysuria is associated with a vaginal discharge but many women with urinary tract infections also complain of vaginal discharge.[9,12] At least one study found there was no significant difference between symptoms in women who were later proved to have urinary tract infections and in those with sexually transmitted infections; in many cases symptoms included a low-grade fever.[13] The only historical factors reliably shown to be preferentially associated with urinary tract infection are a history of urinary tract infection, urgency, and gross hematuria.[12] Therefore, history alone can neither lead the physician to a definitive diagnosis nor obviate the need for a pelvic exam.

OF WHAT BENEFIT IS THE EXAMINATION?

This question is composed of two parts: which physical findings help point to a specific diagnosis and, with the advent of sensitive urine tests for gonorrhea and chlamydia, is an external exam and quick swab of the vaginal vault adequate for diagnosis in most cases?

Regardless of whether a speculum exam is performed, an external exam of the genitalia is invaluable. About 10%-12% of those younger than age 20 have genital manifestations of infection with the herpes simplex virus,[1] and 10% of women with this infection will complain of dysuria.[12] Often women deny having urinary frequency and complain of external pain. Patients with herpes might also complain of fever, malaise, headache, and myalgia, especially during their first infection. Viral culture of vesicle fluid has a high sensitivity for diagnosing herpes infection but it takes about 24 hours.[14] A more efficient alternative is to do a Tzanck test of the vesicle base; this yields an immediate result.

The other painful external lesion seen in America is chancroid; it can produce dysuria, vaginal discharge, and dyspareunia. Chancroid is much less common than herpes, occurs predominantly in men, and tends to occur in epidemics. On exam, a red, tender papule or a painful ulcer with ragged edges and foul smelling gray-yellow exudate will be apparent, and a Gram or Giemsa stain or culture of the lesion will confirm the diagnosis.[15]

Findings that support the diagnosis of chlamydia during a pelvic exam are vaginal discharge (seen in 66% of women with chlamydia), cervical motion tenderness (31%), vaginal bleeding (19%), and abdominal or adnexal tenderness (16%). These findings lack specificity.[10] Cervical motion tenderness, for example, is a sign of peritoneal irritation and can be found in women with an ectopic pregnancy, appendicitis, and other abdominal conditions. Mucopus has a sensitivity of 11% and a specificity of 95% for diagnosing chlamydia. Friability of the cervix is also a sign of cervicitis having a sensitivity of 13% and a specificity of 94%.[16]

Clinics fortunate enough to have urinary tests (ligase chain reaction, for example) available for diagnosing chlamydia and gonorrhea may need to decide if these tests, coupled with a swab of the vaginal vault, are adequate to allow the physician to forgo the speculum exam. A study done at Johns Hopkins University compared the results of a full speculum exam to those of a blind vaginal swab in 686 women aged 12-22.[16] There was no significant difference in the accuracy of the diagnosis of vaginitis between collection methods. Other studies have shown ligase chain reaction, a gene amplification technique, to have a sensitivity of 95%-96% and a specificity of 100% for gonorrhea, and a sensitivity of 88%-96% and a specificity of 100% for chlamydia. Ligase chain reaction performed on urine is approved only as a screening tool for gonorrhea, but it has been used successfully for both gonorrhea and chlamydia in adolescents [16-18]

The most pressing reason for a practitioner to perform at least a bimanual exam is to rule out the possibility of

pelvic inflammatory disease, which is classically diagnosed by the triad of low abdominal pain, cervical motion tenderness, and adnexal tenderness. Unfortunately, if compared with the gold standard of laparoscopy, the clinical accuracy of these findings reaches only 65%.[3,19] Other indications that can help confirm the diagnosis are that symptoms occur early in the menstrual cycle, douching is performed regularly, and that there is nausea, dysuria, fever, irregular bleeding, dyspareunia, and vaginal discharge. Concentrations of C reactive protein are raised in up to 96% of cases, and their fall to normal limits indicates that treatment has been adequate.[20] If the patient has an erythrocyte sedimentation rate >15 mm/hour, temperature >38°C, and an adnexal mass in addition to the standard diagnostic criteria, sensitivity increases to 98%.[19] Magnetic resonance imaging and ultrasound scanning look promising in studies of nonsurgical diagnoses.[6,21]

Adolescents with pelvic inflammatory disease can be treated as outpatients if they are reliable, stable, and not infected with HIV, if they will take oral medication, and if a follow-up appointment is arranged for 72 hours later (box). Physicians should, however, maintain a low threshold for admitting women who do not meet these criteria or who have a tubo-ovarian abscess.[22] If pelvic inflammatory disease is diagnosed, a cervical culture should be done to ensure that the pathogen is gonorrheal or chlamydial, since other agents may be involved including mycoplasmas, herpes simplex virus, anaerobic bacteria, *Escherichia coli*, streptococcus species, bacteriodes species, peptostreptococcus, and even actinomyces species in patients who use intrauterine devices.[23]

WHICH LABORATORY TESTS HELP?

Initial decisions about treatment need to be made in the context of a quick visit to an office or emergency department, and laboratory tests that can be done quickly are the most useful guides. Results of urine dipstick analyses are sometimes useful. Leukocyte esterase is produced by white blood cells and is a marker of their presence in urine. The presence of this enzyme indicates that there are bacteria in the urine, and this finding is 90%-95% sensitive if the urine contains >100,000 bacteria; it is 70% sensitive for <100,000 bacteria. Unfortunately, both acute urethral syndrome and urinary tract infections can yield positive leukocyte esterase tests, and many substances, including cephalexin and tetracycline, can cause false negatives. The presence of nitrites points toward a probable urinary tract infection but the lack of nitrites cannot rule one out; *Staphylococcus saprophyticus*, a non-nitrate reducing bacteria, is a common cause of urinary tract infections in adolescents.[13] Negative tests for nitrites and leukocyte esterase have a negative predictive value of 97.5% for ruling out urinary tract infections but they do not rule out acute urethral syndrome.[29] Hematuria, either gross or microscopic, is uncommon in acute urethral syndrome but is common in urinary tract infections, particularly those caused by *S saprophyticus*.[30-32]

Pyuria may be identified by microscopic exam in both urinary tract infections and acute urethral syndrome. It is defined by different sources as >5 to >10 white blood cells per high power field. Using the cut off of ≥8 white blood cells per high power field the sensitivity for diagnosing a urinary tract infection is 91% and the specificity is 50%.[32] About 50% of urinary tract infections occurring in the lower tract and 90%-95% of those occurring in the upper tract will have Gram stains with >100,000 bacteria/mL.[31] Identification of a single typical organism has a sensitivity and specificity of >90% for diagnosing a urinary tract infection.[24] Unfortunately, patients with acute urethral syndrome may have any number of white blood cells or bacteria present on microscopic exam, although the syndrome is generally associated with a lower white blood cell

Outpatient treatment of urinary tract infections[24-28,36]

Diagnosis	First line treatment*	Second line treatment	Percentage of cases resistant to these drugs at UCLA's student health services†
Uncomplicated cystitis	3 days of trimethoprim-sulfamethoxazole double strength twice a day; or 3 days of ciprofloxacin 250 mg two times a day, ofloxicin 200 mg two times a day, or another fluoroquinolone‡	Cephalexin 500 mg orally four times a day for 7-10 days	Trimethoprim-sulfamethoxazole 15%; ciprofloxacin 0%; ampicillin 39%; cephalexin 15% (*E coli* in 81% of isolates)
Uncomplicated pyelonephritis	Doses as above but increase treatment duration to 14 days for trimethoprim-sulfamethoxazole and 7 days for ciprofloxacin (slightly more effective than trimethoprim-sulfamethoxazole)	Doses as above but increase treatment duration to 14 days	As above

*Single-dose treatment no longer recommended
†Quinolones are recommended for first line treatment if resistance to trimethoprim-sulfamethoxazole is >10%. They have better bacteriologic resolution and fewer side effects but are more costly. Most studies identify resistance to ciprofloxacin in 5% to 10% of samples
‡Not recommended for treating patients ≤17 years. Ciprofloxacin and ofloxacin may be effective against *Stophylococcus soprophyticus*.

count and a lower bacterial count than urinary tract infections. In patients with gonorrheal urethritis, the appearance of intracellular gram-negative diplococci on urine microscopy is pathognomonic but is seen in only 50% of women with the disease.[12]

It is not necessary to culture a sample to treat uncomplicated, nonrecurrent cystitis in healthy people provided patients know that they should return in 48 hours if there is no improvement. Urine cultures are required, however, in uncomplicated pyelonephritis occurring in healthy people, although blood cultures are not.[25] However, a much higher percentage of urinary tract infections in adolescents may be caused by infection with *Staphylococcus saprophyticus* than in the general population. Therefore, if an antibiotic that is not effective against gram-positive bacteria is used, a culture may be necessary. The more common reason for doing a culture is to ensure that, if tests for gonorrhea and chlamydia have not been done, the symptoms attributed to a urinary tract infection are not actually related to a sexually transmitted infection.

If vaginitis is suspected, a swab from the vaginal vault should be obtained and slides made for a wet mount. More sensitive methods of detecting trichomonas species include culture and polymerase chain reaction.[33] If taken from the cervix, a cell culture is 100% specific for chlamydia but only 65%-80% sensitive, and it requires 3-5 days to produce results.[2] Direct immunofluorescence and enzyme immunoassay are sensitive tests for gonorrhea and chlamydia; enzyme immunoassay is technically easier and requires only 4-5 hours to perform. Ligase chain reaction is a sensitive test that can be performed either on a cervical swab or a urine sample. For gonorrhea, an additional helpful test is a Gram stain of the cervical mucus, which will test positive for polymorphonuclear neutrophils with intracellular diplococci in 2 of 3 patients with symptoms.[19]

CONCLUSIONS

In an adolescent girl who is at high risk of contracting a sexually transmitted infection and who has dysuria and frequency, it is difficult to rule out a sexually transmitted infection using only results from simple, noninvasive tests. If an external exam rules out lesions such as genital herpes and chancroid, and the results of a potassium hydroxide slide and wet mount are negative and have made the diagnosis of vaginitis unlikely, the question of how extensive a work up is needed remains to be answered. In a woman at a low risk of contracting a sexually transmitted infection treatment of cystitis may be appropriate, if her symptoms include urgency, hematuria, suprapubic pain, a dipstick test that is positive for nitrites, and a finding of >100,000 bacteria/mL on an unspun urine sample. If the diagnosis is less clear, a urine culture and an exam for gonorrhea and chlamydia may be necessary.

As urine ligase chain reaction testing becomes more widely available for the diagnosis of chlamydia and gonorrhea, it will be reasonable to limit the number of full pelvic exams performed. It may be possible to treat a woman for cystitis while awaiting the results of the ligase chain reaction if she is at low risk and has dysuria with or without discharge, no abdominal pain, and the results of the external exam and vaginal wet mount are normal. As long as follow up of these results is ensured and careful discharge instructions are given, many women presenting to clinics and emergency rooms can avoid a speculum exam. If necessary, a bimanual exam to exclude pelvic inflammatory disease may be done instead of a full speculum and bimanual exam since it is more comfortable for the patient, faster for the physician, and does not require a speculum, exam lights, and a gynecological bed.

Pregnant teens with pain or vaginal bleeding generally have both a speculum exam and a bimanual exam, as well as assessment for cervicitis and a urinary tract infection. Localization of pain, estimation of uterine size, and visualization of the os to see if it is open all help in evaluating the risk of an ectopic pregnancy and in managing a possible spontaneous abortion.[34,35] Many texts teach that any woman with low abdominal pain should have a bimanual exam to differentiate between abdominal and pelvic pathology, although no study has directly evaluated the accuracy of this advice.[36,37] Since pelvic inflammatory disease, a ruptured ectopic pregnancy, and many other gynecological disorders can present as generalized abdominal pain, consideration should be given to performing a bimanual exam on teens who are at moderate to high risk of these conditions and who have these symptoms.[38]

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Netphiles

www.safersex.org refers to itself as the pre-eminent resource for information on safer sex on the Internet. I doubt many would disagree after visiting it. It is explicit, but necessarily so, as it points to the fact that the failure of condoms to protect against sexually transmitted diseases and pregnancy almost always results from incorrect use. The site offers the browser the option of viewing a short video clip showing how to put on and take off a condom correctly, using a realistic plastic penis. For the more easily embarrassed, there is a series of cartoons that show step-by-step how to use a condom (including tips for the uncircumcised male). Parents who are uncomfortable or unable to broach such issues, yet feel a duty to make sure their child is responsibly informed, should consider visiting this site. They can then decide whether or not the information is suitable for their teens. www.safersex.org is a clear example of how the Web can be a useful resource for honest discussion of safer sex aimed specifically at teens.

Amina Hussain, medical student

We welcome suggestions for Web sites to be included in future Netphiles

CURBSIDE CONSULT

When genital pain occurs in adolescent boys, what conditions should we be thinking about?

Physicians should first think of the most probable etiologies of penile pain, such as sexually transmitted diseases or trauma. It is important, however, to then consider a broad range of differential diagnoses in each patient with genital pain.

LOCALIZED AND REFERRED PAIN

Independent penile pain is a rare complaint[1] and may be secondary to a local disease or a result of referred pain. The inferior hypogastric plexus (T10-L1 (sympathetic) and S2-S6 (parasympathetic) nerves) is thought to be the neural integrative system in the pelvis that innervates the urinary bladder, proximal and distal urethra, rectum, and reproductive and genital structures.[2] The neural supply of the penis is derived from the cavernosal and pudendal nerves (S2-S4).[3] When the sensory nerves that innervate organs of similar embryonic origin are stimulated by a pathologic process,[4] pain can be mislocalized to any area innervated by the spinal segment that also innervates the damaged viscera.[5]

PRIMARY AND SECONDARY CAUSES

The radiation of pain plays an integral part in determining urologic from non-urologic processes. Primary pathologic processes within the penis that can result in pain include urethritis, urethral foreign bodies, priapism, Peyronie's disease, trauma, paraphimosis, and external dermatologic conditions and/or insect bites (for example ant and spider bites). Primary processes involving areas adjacent to the organ that result in penile pain include prostatitis and scrotal disorders (such as testicular torsion, epididymitis, and orchitis). Pain experienced in a flaccid penis typically is the result of inflammation caused by sexually transmitted diseases or balanoposthitis, whereas pain in an erect penis is usually due to priapism or Peyronie's disease. Paraphimosis and balanitis should be considered in the differential diagnosis of penile pain in men who are uncircumcised.

Penile pain is associated with testicular torsion, blunt/straddle injury (penile trauma or penile fracture), penetrating injury, and the relatively under-diagnosed conditions of male genital pain syndrome,[5] reflex sympathetic dystrophy,[6] and painful male urethral syndrome.[7] Patients with direct inguinal hernia, [8] pudendal neuralgia,[9,10] and pain disorder associated with psychological factors[11,12] may also experience penile pain.

Testicular torsion

Testicular torsion is a urologic emergency that can cause penile pain. Torsion should be considered first in the differential diagnosis of adolescents with groin pain.

Trauma

Penile fracture is an unusual urologic emergency characterized by traumatic rupture of the tunica albuginea (one of the strongest fascial layers of the body) and of one or both corpus cavernosa affecting the rigid penis (figure). The incidence of penile fractures is unknown because such trauma is not always reported. Patients typically report striking their erect penis on an object, followed by the sudden onset of pain in the shaft of the penis and subsequent rapid detumescence. A cracking or popping sound may be heard at the moment of injury.

Physical examination reveals swelling and ecchymosis of the penile shaft at the area around the flaccid corpora. Hematoma formation usually causes deviation of the penis to the opposite side of the injury. Blood at the urethral meatus or gross hematuria is indica-

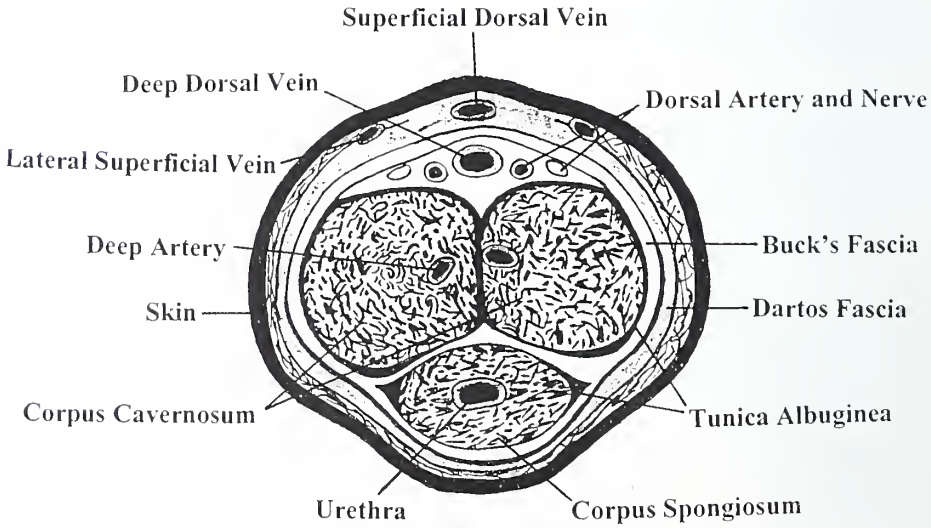

Figure 1 Cross section of the penile shaft. The corpus cavernosa consists of masses of cavernous erectile tissue enclosed in a dense fibrous capsule, the tunic albuginea

tive of urethral injury. Treatment of penile fracture involves surgical intervention (evacuation of the hematoma and repair of the tunica albuginea) or the use of nonsteroidal medications and compression dressings.

A straddle injury is a relatively common cause of penile pain in adolescents. Trauma of this type may also result in urethral injury.

When blood is found at the urethral meatus following penile fracture or straddle injury, retrograde urethrography is used to evaluate the extent of injury and to ensure safe placement of a Foley catheter if catheterization is required.

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How should doctors talk to teen patients?

Doctors can be intimidating to teens and it is important to help them tell you what's on their mind. Health care practitioners caring for adolescents should follow these tips on how to talk to their teen patients.

- Remind your patients that, by law, you cannot disclose anything discussed between you and your patient. This will make teens feel more comfortable talking to you.
- Don't be shocked (or at least show your shock). It is difficult for a teen to talk to a doctor who looks shocked. Just because you've never met a pregnant 10 year old does not allow you to look her in the eye with a stunned look and say nothing. (This tip is especially helpful in the case of problems to do with sex.)
- Let your patient know, through both body language and words, that they can discuss anything with you. Teens need to know that their doctor is accessible to them.
- Doctors, in my experience, refrain from discussing their patients' sexual pasts with them. This is probably because any adult, or anyone for that matter, is uncomfortable hearing about anyone's sex life, especially an adolescent's. Not until I began visiting the doctors at college did a doctor ask me about my sexual activity without my prompting a question that would lead them to ask. When a patient comes for a simple check-up, doctors should make sure that their patient is entirely healthy. A good way to make sure is to ask about their patient's sexual activity.
- Believe what their patients say. On one occasion, a doctor who asked me if I was pregnant, did not listen to me when I told him that I was not sexually active, and kept pressuring me. Unless you are absolutely sure that a patient is not being truthful, do not prod them into telling you what you want to hear.
- If a parent is present in the exam room, ask them to leave or ask your patient if they would prefer to have their parent(s) present or not. If a parent is either present or not, it can change the patient's comfort level, and change whether or not you hear what is actually bothering the patient.
- Treat teen patients in a way that is right for their age. Because most teens still see pediatricians, many pediatricians make the mistake of talking to their teen patients like the 4 year olds they treat. Teens are almost adults, and like to be treated like they are adults.
- Parents and doctors should explain the procedure of a pelvic examination and their feelings and experiences with it so that the teen understands that other people have survived them. Also, one important thing to tell patients ahead of time is that a female nurse must be present during the procedure when the examination is performed by a male doctor. Many of my friends have made gynecologic appointments and have been seen by male doctors. They have been scared of being seen by men and are frightened of molestation. Knowing before the examination that by law a woman must be present can calm the patient.

Michelle Goodman

Age 18 years, Los Angeles, California

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Culture and Medicine

Myths and medicine

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In this issue, *WJM* starts an ongoing series called Medical Myths. We aim to encourage readers to evaluate critically even the most standard and widespread practices, when they are based on tradition and the weight of authority, but in the absence of, or contrary to, available evidence.

Although our use of the term myth does not necessarily imply all the elements of classical mythology, it is appropriate because mythological medical practices may well arise from the same social needs, and serve a similar purpose, as cultural mythology. In the larger sense, myths are shared stories that arise and live for generations, initially in oral tradition, but eventually taking on new life in literary versions created by poets, journalists, and historians (or textbook authors). Myths seem to respond to profound communal needs, most often including the need to justify existing power relations, whether they be between gods and humans, the community and the individual, men and women, parents and children, teachers and students, or specialists and generalists. Myths try to assure us that our experiences are shared, and they can function as a means of social control and certification of legitimacy.

Myth does its work in the heart and can therefore be more powerful than the logic to which it has always been opposed. Poets like Homer were the first great mythologists, but myth plays a role in all aspects of communal life. Great logicians—like Plato, for example—frequently recognized this, and deployed *mythos* to support their abstract *logos*, which they thought most people would never be able (or even want) to comprehend. Politicians, throughout history, have used and manipulated mythology to win support for projects the underlying logic of which might be otherwise unappealing. Hitler used the Greek myth of racial purity with enormous success, and the feuding aristocracy of Europe, in World War I, relied on myths of nationalistic pride, religious hatred, and racial superiority to help convince the poor of their countries to murder each other by the millions. Modern politicians exploit all types of mythology—from ancient Biblical "promises" about land, to religious pronouncements about the "proper" relationship between men and women, to memories of glorious past battles against brutal enemies, to nationalistic concepts of racial or ethnic unworthiness—to further their ends. Readers can surely think of many of the ways in which myth is used today to incite group hatred, or attack protest, or innovation, or any real challenge to the status quo.

Medicine, too, has long been the subject of mythology. The Greeks and Romans created myths about the first physician, Asklepios (or Aesculapius), a son of Apollo. The Greeks believed that all human skills came from the gods, and by tying medicine to such an important god as Apollo, they invested it with great power and importance. Asklepios' two sons were included by Homer as heroic warriors in the Trojan War, thus conferring aristocratic status on physicians, who as a group became known as Sons of Asklepios.

Early Greek and Roman poems told mythological tales about medicine and healers. The first such poem, the anonymous *Hymn to Asklepios,* hails this first physician as a "great source of delight to human beings," one who "charms away pain." Similarly, the great poet Pindar calls him the "gentle architect of pain relief." Although Greek healers could not easily claim to prolong life, they attained heroic status nonetheless. On the other hand, when Pindar's Asklepios (and by extension all physicians) overstepped his bounds by reviving a dead man, he was blasted to Hades by Zeus' thunderbolt, reminding us of the danger of pride (*hubris*), such as is reflected by a physician's attempt to be god-like (by cheating death).

Medical myths based on authoritarian dictates, in the absence of or contrary to evidence, must also serve a similar need. The first myth we will cover is the prohibition of analgesia for patients with a possible surgical cause of abdominal pain—a telling example (see p 209). Restriction of pain relief—relief of pain being the very core of what healers have always done and for which they have always been exalted (as the Greek myths remind us)—seems clearly antithetical to the interests of both physicians and their patients. How could an authority like Cope have propounded this contrarian principle so forcefully, and he and his disciples inculcated it so successfully throughout the profession, in the absence of any evidence? Whose interests did it (and does it still) serve? Why do physicians of all stripes continue to underuse analgesics, not only in the setting of acute abdominal pain, but also in so many other areas of medicine, based on discredited concepts (but ongoing mythology) about "creating addicts," and "drug-seekers" and "obscuring diagnosis"?

Mythology in general plays to our hearts, to get us to believe things for which logic or evidence is lacking. When myths convince us to act in ways that are contrary to our own interests, or (for healers) to the interests of patients, we must first recognize them for what they are, then critically challenge their assumptions, and finally, have the courage to abandon them.

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Medical Myth

Analgesia should not be given to patients with an acute abdomen because it obscures the diagnosis

Surgical tradition holds that the use of analgesics should be withheld from patients with acute abdominal pain until a diagnosis and management plan have been established by a surgeon. This belief originated early in this century[1] and was emphasized by Cope in his extremely influential book, *Early Diagnosis of the Acute Abdomen.* Cope claimed that analgesia would mask signs and symptoms, delay diagnosis, and lead to increased morbidity and mortality.[2] In the most recent edition of Cope's book, Silen condemns the practice of withholding pain medication from a patient with acute abdominal pain. In the next sentence, however, he states that analgesia medication should be given only after a "responsible surgeon" takes a thorough history and performs a thorough physical examination. In actual practice, a surgeon is rarely the first physician to examine a patient with acute abdominal pain, and surgical consultation can take many hours. Given that all the evidence in the medical literature suggests that the use of narcotic analgesia does not obscure diagnosis—and may even improve diagnostic accuracy—in such patients, the traditional practice of withholding pain medication in patients with substantial pain should be seen as inappropriate and inhumane.

Currently five prospective randomized studies in the literature address the use of pain relief in patients with acute abdominal pain.[3-7] Although study methods vary to some degree, all patients were randomly assigned to receive narcotic analgesia or placebo, and all studies used variations of visual analog scales to evaluate pain before and after patients received medication. All the studies then compared the accuracy of the clinician's diagnosis and treatment in patients who did or did not receive narcotics; four of the studies used a double-blind design.

Attard and coworkers performed a randomized double-blind study[3] and found that the early administration of opiate analgesics to patients with acute abdominal pain relieved discomfort without compromising diagnosis or treatment. One hundred patients were given either intramuscular papaveretum (a combination of morphine, codeine, and papaverine not available in the US) or placebo, and pain and tenderness scores were substantially reduced in the group receiving an opiate compared with those receiving placebo. There was no difference between the groups in the localization of physical signs, and there was 100% confidence in the surgical registrar's management plan in both groups. The decision whether to perform surgery was ultimately found to be incorrect in only two patients given narcotics compared with nine patients given placebo.

Pace and colleagues, in another double-blind, placebo-controlled study involving 75 patients, found that intravenous morphine sulfate effectively relieved pain and did not alter physicians' ability to evaluate accurately and treat patients appropriately.[4] Patients received titrated intravenous doses of morphine of as much as 20 mg. Three diagnostic or management errors occurred in each group.

LoVecchio and associates also found that the early intravenous administration of 5 to 10 mg of morphine did not affect the diagnosis or treatment of patients with acute abdominal pain.[5] The use of morphine was associated with some change in tenderness and localization in half the patients but led to no delays in care or eventual morbidity.

In a study by Vermeulen and colleagues, morphine was used to evaluate the effect of early pain relief on US physicians' performance and surgical decision making.[6] The use of morphine improved pain compared with that of placebo and was not found to change the appropriateness of the surgeons' decision making.

Zoltie and Cust randomly assigned patients with acute abdominal pain to receive sublingual buprenorphine hydrochloride or placebo.[7] Buprenorphine use in this study was found to be no better than placebo for relieving pain; however, its use showed a tendency to localize tenderness while in no way obscuring the final diagnosis.

Thus, all five studies addressing the effects of analgesia on diagnosis and treatment in patients with acute abdominal pain failed to produce any evidence that this practice is harmful. All of these studies, which together involved 748 patients, concluded that the appropriate use of analgesia can effectively decrease pain to a greater degree than it does the localization of tenderness, while possibly even facilitating the ability to make an accurate diagnosis.

Even given this information, the concern has been raised that the use of narcotics can interfere with surgeons' ability to obtain informed consent if an operation or other procedure is required. This concern is unfounded for a number of reasons. First of all, informed consent requires (among other things) that the patient be capable of evaluating the information in a rational manner and then making an informed decision. Although it is possible to give so much narcotic medication that it interferes with a patient's

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cognitive function, this rarely occurs when medication is given in the amounts needed to relieve acute pain. Most patients who have received narcotics before urgent abdominal surgery feel that they were capable of giving informed consent, despite their medications. In a patient in whom analgesia produces excessive sedation, reversal agents can be used, although this step is rarely needed and should be done with great caution because it can exacerbate pain.

Finally, it could be argued that informed consent is impossible in the absence of analgesia, for two reasons. First, severe pain can impair patients' judgment, so that they are incapable of making truly informed decisions. Second, and perhaps most important, withholding analgesia until consent is signed can rightly be viewed as coercion because patients are led to understand that the relief of pain will only be initiated when the consent form has been signed.

The traditional teaching of withholding pain medication in patients with acute abdominal pain stems from a time when medicine was without modern diagnostic techniques and when the intravenous titration of opiates was not routinely practiced. Early and appropriate pain relief for patients with acute abdominal pain is humane, does not adversely affect diagnostic acumen or clinical decision making, and should be considered part of the initial management of every such patient.

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Adolescent sexuality and the media: a review of current knowledge and implications

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There is growing concern about young people's exposure to sexual content through television and other electronic media and about its potential effects on their sexual attitudes, beliefs, and behaviors. Researchers have documented the growing prevalence of sexual talk and portrayals of sexual behavior in televised media, as well as associations between adolescent viewing patterns and their sexual activities.[1-7]

METHODS

We reviewed the current scientific literature on adolescents and sex in the media—using searches of MEDLINE—and the psychological and media literature. The emphasis was on rigorous research and included accessing the expertise of health care professionals and other knowledgeable sources on the media. These sources included the Kaiser Family Foundation, Menlo Park, California; the Center for Media Education (Washington, DC); and professional societies and organizations from medicine, psychiatry, and psychology. The available research does not adequately address the effects of exposure to sexual content

Summary points

- Adolescents are exposed to many sexual images and messages on television that are almost universally presented in a positive light with little discussion of potential risks and adverse consequences
- Adolescents use the media as sources of information about sex, drugs, AIDS, and violence as well as to learn how to behave in relationships
- Research indicates that adolescent sexuality is associated with media use, but the direction of the relationship is not clear
- Practitioners should address preadolescent and adolescent patients' use of electronic media and the Internet, television viewing patterns, and R- and X-rated movie attendance or video rentals when assessing risk behavior for a thorough medical history
- Parents and guardians should be encouraged to supervise adolescents' media use, take advantage of the "V chip" and screening software to reduce inappropriate access, and help teenagers to critique what they see in the media

in the media on adolescent beliefs, knowledge, intentions, and behaviors. Similarly, research on sexual content of the Internet, in video games or other handheld devices, or in the multitude of other electronic media has been scant.[7]

SEXUALITY IN THE MEDIA

Although sexual content in the media can affect any age group, adolescents may be particularly vulnerable. Adolescents may be exposed to sexual content in the media during a developmental period when gender roles, sexual attitudes, and sexual behaviors are being shaped.[1] This group may be particularly at risk because the cognitive skills that allow them to critically analyze messages from the media and to make decisions based on possible future outcomes are not fully developed.

Analyses of broadcast media content indicate that, on average, teenaged viewers see 143 incidents of sexual behavior on network television at prime time each week,[8] with portrayals of three to four times as many sexual activities occurring between unmarried partners as between spouses.[9] As much as 80% of all movies shown on network or cable television stations have sexual content.[2] An analysis of music videos indicates that 60% portray sexual feelings and impulses, and a substantial minority display provocative clothing and sexually suggestive body movements.[10] Analyses of media content also show that sexual messages on television are almost universally presented in a positive light, with little discussion of the potential risks of unprotected sexual intercourse and few portrayals of adverse consequences.[11,12]

Survey data show that adolescents' access to and use of media as sources of information are substantial. In a national study,[8] high school students reported an average of 2.9 television sets, and 1.3 of 10 (13%) of American children reported living in homes with two or more televisions, 97% had videocassette recorders in their homes, 75% had access to cable television, and more than half had a television set in their own rooms.[7] Further, more than 80% of adolescents report that their peers find out some or a lot about sex, drugs, and violence from television shows, movies, and other entertainment media.[13] About 10% of teens acknowledge that they have learned more about the acquired immunodeficiency syndrome (AIDS) from these media sources than from parents, school personnel, clergy, or friends.[13]

ADOLESCENT SEXUALITY AND CONSEQUENCES

Policy makers and health professionals have long been concerned about premarital sexual activity in the teenaged population and the risks of pregnancy and sexually transmitted diseases, including infection with the human immunodeficiency virus (HIV).[14,15] Nationwide, nearly half

Sara Potashman 1999

of all high school students have had sexual intercourse,[12] with African Americans significantly more likely to be sexually experienced (72%) than Hispanics (52%) or whites (47%).[16] Research suggests that even among teenagers who have not experienced vaginal intercourse, substantial numbers engage in other intimate sexual behaviors that carry health risks.[17]

Among adolescent girls in the United States aged between 15 and 17 years, 75 per 1,000 become pregnant each year,[18] a rate two to seven times higher than rates in other industrialized nations.[19] Those adolescents (19% of the adolescent population) who report four or more lifetime sexual partners are at greater risk for contracting sexually transmitted diseases, including HIV infection.[20] Overall, 25% of sexually active teenagers and 13% of all adolescents between the ages of 13 and 19 become infected with sexually transmitted diseases each year, representing 3 million cases or about 25% of all new cases reported annually.[21]

WHAT WE KNOW ABOUT SEXUAL CONTENT IN THE MEDIA

What we know about the potential effects of televised sexual content on adolescents is based largely on content analyses of media that quantify levels of sexual material

and track trends from year to year.[4,22] This work includes studies of network and cable programming,[2,4] rock music and music videos,[23] and R- and X-rated films available on videocassette.[24]

In addition to content analyses, correlational studies have linked sociodemographic factors (for example, sex, age, and ethnicity) to adolescents' viewing preferences and to their understanding and interpretation of sexual material in the media. Findings indicate that adolescent girls choose network television programs with sexual content more often than do adolescent boys[25] and spend more time watching it, often in the company of parents.[5] Older adolescent boys, however, are more oriented to the hardcore sexual content found in explicit music lyrics and X-rated films.[3] They are also more drawn to new media choices like handheld devices, the Internet, and computer games.[22] Adolescents of both sexes who watch and listen to a lot of media are more likely to accept stereotypes of sex roles on television as realistic than are less frequent viewers.[26]

Other research indicates that ethnicity plays an important role in media viewing choices. Compared with their white peers, African Americans spend more time watching television, are more likely to choose fictional programming with African American characters, and are more likely to perceive those characters as realistic.[27] Similarly, African American adolescents report watching more R-rated movies than white peers, with less parental involvement or mediation.[27] African American and white youths also find different features of video portrayals salient and disagree on story elements.[28] Higher rates of viewing by adolescent African American adolescents, especially of soap operas, make them more likely to see sexual content.[26,27] Comparable data are not available on Asian, Latino, or other ethnic subgroups.

Age or stage of development also influences comprehension and interpretation of sexual content. In a study of sexual innuendo on television,[29] 12-year-old youths were less likely to understand suggestive material than 14- and 16-year-olds. Similarly, in a qualitative study of adolescent girls aged 11 to 15, those who were at an earlier stage of physiologic development were less interested in sex portrayed in the media whereas more mature young women were intrigued and more actively sought out sexual content in the media as a means of "learning the rules, rituals, and skills" of romance and relationships.[30] Specifically, they reported that the media provided models for achieving the "right look" to become popular and attract boys, portrayed teen characters with problems similar to their own, showed how they solved those problems, and gave examples of how to behave in sexual situations. We could not find comparable studies of developmental influences on boys' understanding and interpretation of sexual content.

A few studies have assessed the associations between the degree and nature of adolescent exposure to sexual content and their sexual attitudes and behaviors. A recent study of African American girls aged 14 to 18 years found that teens with either multiple sexual partners or a history of sexually transmitted infections reported a higher rate of viewing television shows that depicted women as sexual objects or prizes.[31] A few experimental studies have shown that viewing sexual content can have moderate effects on sexual knowledge or attitudes,[29,32,33] but it is unclear whether these effects are sustained over time or result in changes in sexual intentions or behavior. Brown and Newcomer[34] found that television viewing patterns differed by the sexual status of the adolescent (virgin versus sexually active), with sexually active teens viewing more television with a high level of sexual content. Determining whether exposure to sexual content encouraged sexual experimentation, or vice versa, was not possible. This is a key unanswered question because of the lack of longitudinal research in this field.

Many theories have been advanced to explain the effects of media on behavior.[6] They are all based on the fundamental notion that greater exposure to the media leads to the adoption of the values, beliefs, and behaviors that are portrayed, particularly when they are shown to be reinforced or are unaccompanied by adverse consequences. Research on exposure to violent content in the media provides some support for these views.[23,35] Sexual activity, however, may not be learned by observation and modeling in the same way as aggression or violence. Other promising work appears in research on televised alcohol advertising and adolescent drinking.[36,37] Findings suggest that simple exposure to alcohol advertisements does not

Table 1 *Resources for further information on adolescents and the media*

Author/Sponsor	Title/Publication	Web Address/Telephone
American Academy of Pediatrics	Sexuality, contraception, and the media: Policy Statement. *Pediatrics* 1995;95:298-300	www.aap.org/policy/00657.html tel: (847) 228-5005
Center for Media Education and Henry J Kaiser Family Foundation	A parent's guide to the TV ratings and V-chip	www.vchipeducation.org tel: (202) 331-7833
Children Now	Research reports on children and the media	www.childrenow.org tel: (510) 763-2444
	Talking with kids about tough issues	www.talkingwithkids.org tel: (510) 763-2444
National Center for Missing and Exploited Children and Larry Magid	Teen safety on the information highway (free brochure)	www.safeteens.com tel: (800) 843-5678
American Academy of Child and Adolescent Psychiatry	The influence of music and rock videos	www.aacap.org/publications/factsfam/musicvid.html tel: (202) 996-7300

affect alcohol use. Rather, the effects of alcohol advertisements depend on the extent to which young people like and attend to them. Music and humor are key elements in determining liking and attention. Importantly, this research used statistical modeling that showed that attention to alcohol advertising increases adolescent drinking, whereas drinking does not influence attention to alcohol advertising.

APPROACHES WITH ADOLESCENTS AND PARENTS

Although research lags behind technology, resources are available that support interventions by medical professionals, parents, and others (table 1). Physicians should address preadolescent and adolescent patients' use of electronic media and the Internet, television viewing patterns, and viewing of R- or X-rated movies or videos when taking a thorough medical history to assess for risk behavior and as a mechanism for discussing sexual knowledge and plans.

No guidelines exist on the recommended amount of time that adolescents should spend viewing television or other media. For many parents and physicians, the barometer of overuse is an amount greater than we or our children use the media. The main concern for practitioners should be whether television or other electronic media use is interfering with an adolescent patient's ability to function effectively in other spheres of life. Does media viewing cut into homework time or other recreational activities like athletics or hobbies? Are teenagers absorbed in long hours of solitary viewing or game playing in their bedrooms without supervision or oversight? Are they modeling their behavior on that of performers or dramatic characters? Is this behavior inappropriate or harmful for their age or stage of development? Are adults aware of the media influence? Asking adolescents about their media viewing can give the physician or parent the opportunity to detect any feelings of depression or alienation. The adolescent may reveal unrealistic expectations about physical attractiveness and unhealthy dieting and exercise practices. Suggested areas for inquiry are presented in table 2.

The importance of supervision and guidance in the media choices of adolescents and their volume of use should be emphasized to parents and concerned adults. Joint viewing or participation may be the best option. When joint viewing is not possible, parents and guardians

Table 2 *Questions to ask adolescents about their use of the media, issues to address, and concerns*

Questions	Issues to address	Concerns
How many hours a week do you think you watch television (and cable television) and videos? How much time do you spend on the computer? How much time do you spend playing electronic games, or with handheld devices?	Is use excessive?	Possible interference with other activities Isolation; alienation; depressive symptoms Lack of guidance and/or supervision Inactivity leading to obesity
What are your favorite game(s); website(s); chatroom(s)?	What is the adolescent potentially being exposed to and/or vulnerable to?	Prohibitive cost Auctions or internet shopping Ambling Access to adult material —sexual content —political extremism —violence —substance use Interactions with strangers who may take advantage of minors
Who is your favorite character or performer, program(s), or film(s)	Does the adolescent have an unhealthy association or preoccupation with media characters, personalities, or activities?	Inappropriate dress, makeup, speech, or gestures Violent or sexual content inappropriate to age or stage of development Excessive attention to weight or body image —exercise or body building —disordered eating and poor diet —use of diet pills, laxatives, etc. Desire to relive or reproduce favorite plots or media events involving sex or violence

should be encouraged to take advantage of the television V chip and screening software for computers to reduce inappropriate access. Finally, adults in all areas of adolescents' lives need to help teenagers critically evaluate the media and it's often unrealistic representation of characters, products, behavior, and life situations. Teaching adolescents to be critical consumers of electronic media is the best prevention strategy.

CONCLUSIONS

Simple exposure to sexual content in the media will not make teens deny or ignore values and information they have absorbed from families, school, religious teachings, and other respected adults. Longitudinal studies of young people could provide a better understanding of how sexual portrayals in the media are integrated into adolescents' beliefs about the risks and rewards of engaging in sex and their intention to act on these beliefs. Future research must also take into account the importance of parental involvement in adolescents' use of the media, the degree of adolescents' understanding of the unreal nature of the media, teens' possible identification with fictional characters or highly visible media personalities, the norms modeled by parents and peers, and adolescents' own understanding of the consequences of health risk behaviors.

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West of the Rockies

Speaker's Corner

What's up, Doc?

I see a lot of doctors. There's my pediatrician, my endocrinologist, my dermatologist, my gynecologist, and my allergist, who has expertise in chiropractic medicine and acupressure. (I see him whenever I have back and neck problems.) And I know how hard it is to talk to all of them, especially when I have embarrassing problems and questions.

THE OLDEST KID IN THE WAITING ROOM

My family belongs to a health care group where you see the pediatrician until you're 18. At 17, you're the oldest kid in the waiting room. You can barely fit in the chairs; all the little kids look up and stare, at the giant child, in awe.

It feels funny when you have to talk to your doctor about sex, this same person who saw you naked when you were 2 years old. And then, there are those times when you don't have questions about sex or other sensitive issues and yet the doctor thinks you do. I recall seeing a doctor one time because I had the flu. He started asking questions about my menstrual cycle, asked my mother to leave the room, and eventually accused me of being pregnant. I understand that he had seen many girls, just like me, who were pregnant, but I was not—I had the flu. I pleaded and explained, and he finally understood.

It is important for me to be able to ask any question and to get sound medical advice

Danielle Gerber 1999

TEENAGERS SHOULD NOT BE AFRAID TO TALK TO THEIR DOCTORS

No one should feel uncomfortable talking to their doctors about anything. It is important for me to be able to ask any question and to get sound medical advice that can keep me healthy and to prevent pregnancy or AIDS. I used to think that if I had sensitive questions or problems that my parents might find out about what I said to my doctor. But I learned about doctor-patient confidentiality and so I am no longer afraid to ask important questions or talk to my doctors.

Michelle Goodman

Age 18 years, Los Angeles, California

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Michelle Goodman offers tips to doctors on how to talk to teens in *Curbside Consult* on page 207

7:15 am

Danielle Gerber

Danielle Gerber is a student at Crossroads School, Santa Monica, California

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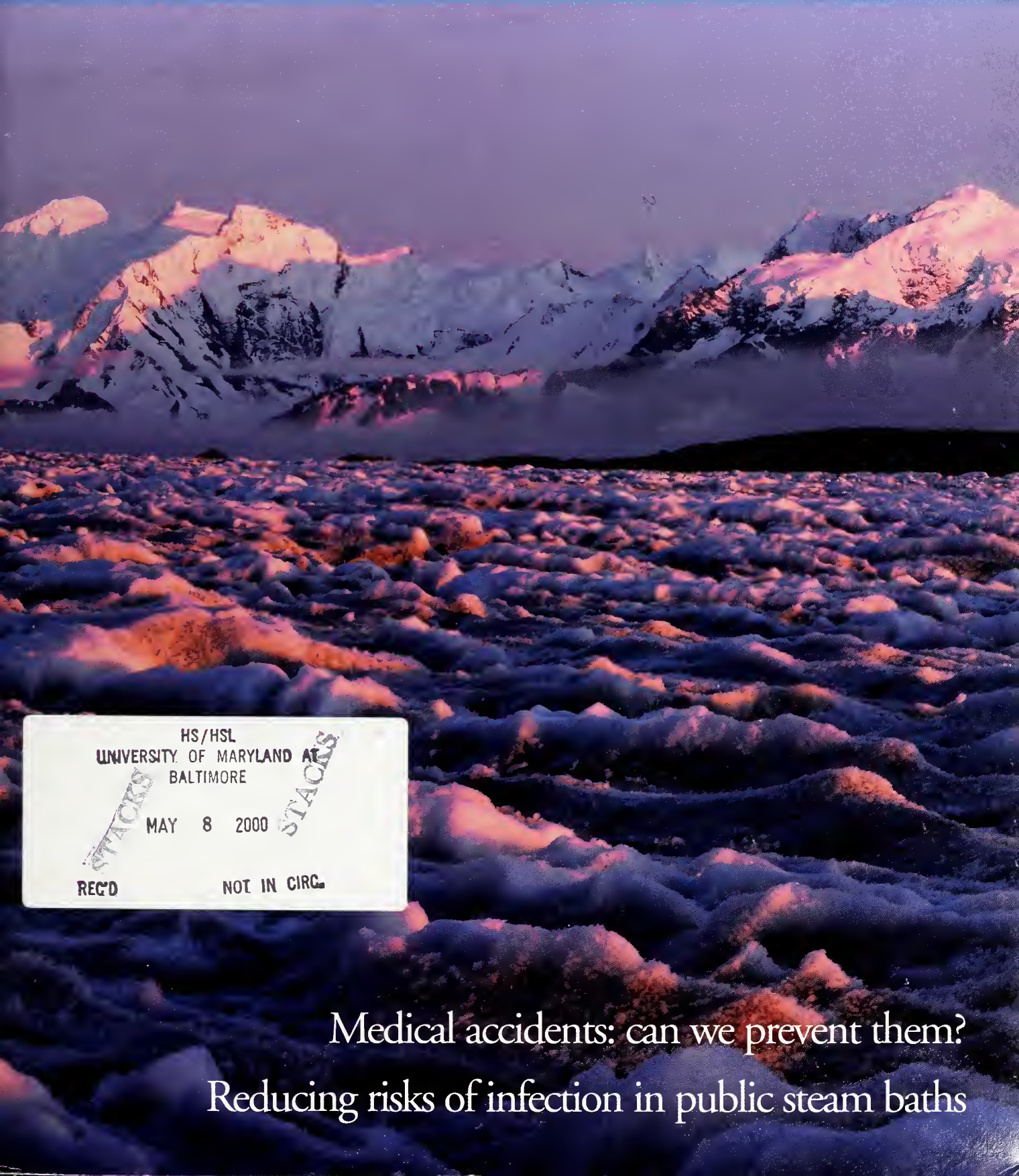

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Medical accidents: can we prevent them?

Reducing risks of infection in public steam baths

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This month in wjm

Towels may prevent boil outbreaks after steam baths

When the Alaska Division of Public Health investigated a large outbreak of furunculosis in a village, it was concerned that steam baths might be spreading infection. On p 235 Landen et al describe how their case-control study found that not only was having a steam bath associated with developing a boil, but also bathing without a towel and with more than eight people increased the risk of infection. Using your own soap was found to be protective. Boil outbreaks occur sporadically in Alaskan villages and health education programs advising the use of dilute chlorine bleach to clean steam baths and bathers to sit on towels have only limited success.

Is it medically negligent to use placebos in trials?

Placebo-controlled trials have traditionally been the standard for clinical trials of new drugs. But on p 271 Chiodo et al argue that when patients with active disease are given placebos, they are being denied effective treatment. It may be unethical to allow them to participate in a trial in which their medical condition may worsen. Informed consent may also be difficult to obtain because patients may not realize they may not benefit from taking part in the trial. Chiodo et al want to see strict adherence to guidelines for such trials.

How to manage menorrhagia

Surgery is not always necessary for women who have menorrhagia, says Prentice on p 253. This common and unpleasant condition can often be treated successfully by medical means, such as antifibrinolytics and nonsteroidal anti-inflammatory drugs. The former reduce bleeding by one half, the latter by one third. Progestogens often fail because they are not given properly (21 days each cycle is essential) and the best choice may be the recently licensed levonorgestrel-releasing intrauterine system.

The cost of actively managing labor

The duration of an actively managed labor is shorter than one that is traditionally managed. On p 240 Rogers et al find that active management of labor does not translate into massive savings—the money saved from an actively managed labor is only around $47 per birth. Most of this is due to a reduction in cesarean sections. The average time of labors was reduced by nearly 2 hours—arguably more of a saving.

Editor's Pick

In the practice of medicine, accidents happen. In fact, they are alarmingly common. Last November, a report from the Institute of Medicine claimed that between 44,000 and 98,000 Americans die from medical errors each year. On p 229 Charatan reports on moves by two senators to introduce a bill to improve patient safety. Some hospitals, he says, already have computerized programs to check drugs against patient's allergies, other medication they take, and laboratory test results. Drug errors are the most common cause of patient death, accounting for an estimated 7,000 deaths a year.

Medical accidents are often caused by a complex chain of events. This chain may only be unravelled through the filing of a malpractice suit, causing anguish to both the physicians involved and the patient's family. On p 267 Davidson relates the gripping but simulated tale of a previously healthy man who undergoes endoscopic sinus surgery. During the procedure, there is a leak of cerebrospinal fluid and the patient later develops meningitis and brain damage. The jury in the malpractice suit find the physician guilty and award the defendant the maximum of the malpractice insurance policy. But it's not that simple. Along this tragic path, there could have been other turns—the patient didn't properly try medication, the hospital didn't have equipment that was state of the art, and the physician had been called out the night before the procedure. As Davidson points out, the aviation industry is run by protocols and checklists that medicine could do well to copy.

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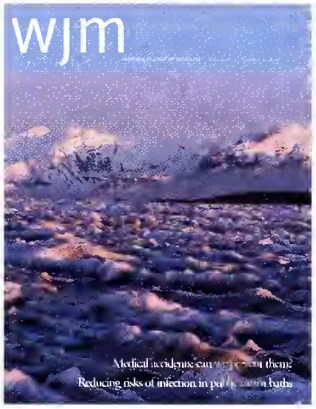

David Muench/Tony Stone Images

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Op-Ed

The genetically modified food fight

Higher levels of testing are needed for crops that have an increased potential for harm

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The once sedate farm scene has turned into a roiling battle ground, pitting, at the extremes, the growing of organic crops against crops derived from biotechnology. Organic farming eschews synthetic pesticides and fertilizers, whereas crops that are derived from biotechnology are developed through the use of recombinant DNA.

Although most consumers have some awareness of the attributes of organic agriculture, they know little about agricultural biotechnology. However, the increasingly strident controversy over biotechnology may replace that ignorance with confusion. In such an environment, it behooves government—and industry—to build long-term public confidence by establishing strict rules to ensure safety and choice for consumers and to safeguard the environment. And it behooves physicians to respond knowledgeably to questions from patients wishing accurate information.

The US Food and Drug Administration (FDA) is responsible for ensuring the safety and honest labeling of foods, including foods derived from genetically engineered plants (also referred to as genetically modified organisms).[1] The FDA strongly encourages, but does not require, companies to consult with it when they wish to market new genetically modified foods; to date, all companies have done so.

The FDA urges companies to conduct allergenicity studies when a gene is transferred from a plant known to be commonly allergenic (or when a novel protein is introduced). Thus, thanks to premarket testing, a company found that a Brazil-nut gene that it had added to soybeans encoded a known allergen. The company did not market the product.[2] Importantly, the allergen was identified only because it was known and could be tested for. An allergen newly introduced into the food supply (say, from a bacterium) would be difficult to identify.

Critics have raised additional health concerns. For instance, levels of naturally occurring toxins, such as solanine, might accidentally be increased in genetically modified plants. Again, the FDA encourages, but does not require, companies to screen for such substances. It also is conceivable that genetic engineering might engender a novel toxicity, as suggested by a recent controversial study of potatoes that had been genetically modified.[3] If genetic engineering were to cause a behavior disorder or autoimmune disease, or to interfere with a medicine, those risks would be difficult to identify either before or after marketing. Although the same can be said for foods derived by traditional breeding (and, indeed, high levels of toxins have occurred in several strains of traditionally bred potatoes, celery, and squash), we have had comparatively little experience with genetically modified foods.

It is impossible to prove with certainty that something is completely safe, but foods that may be consumed by billions of people must be tested as thoroughly as possible. Although the widespread consumption of foods derived from biotechnology in recent years has not caused any known health problem, the FDA's current voluntary review system lessens public confidence and should be made mandatory.

The FDA should calibrate testing requirements to a food's potential for causing harm. For instance, foods containing genes from an organism that causes allergic reactions would require more thorough testing than foods modified only with genes for known, safe proteins. Transfer of a common allergen into another food should be prohibited. And for genetically modified foods in which gene products came from nonfood sources, were present in significant quantity, or whose structure suggested a possible health problem, the FDA could require more extensive testing, possibly including studies of animal feeding, and submission of complete toxicologic data.

Aside from questions of safety for consumers, genetically modified crops might adversely affect the ecosystem.[5] The US Department of Agriculture (USDA) bears the primary responsibility for ensuring that such crops do not adversely affect the environment or agricultural practices more than their nonmodified counterparts, while the US Environmental Protection Agency (EPA) evaluates crops engineered to contain pesticidal material.

These agencies face difficult challenges because genetically modified crops raise genuine ecological concerns. For instance, corn engineered to contain the insecticidal toxin from *Bacillus thuringiensis* may possibly trigger resistance in pests (such as the corn borer), inadvertently contaminate the gene pool of wild varieties of related species, and kill desirable insects (such as the Monarch butterfly). To obtain independent advice on such concerns, the US Department of Agriculture recently established an advisory committee on agricultural biotechnology and commissioned the National Academy of Sciences to review the department regulatory process. It would be valuable for the FDA to commission an analogous study on safety issues.[6]

Increasingly, consumers are asking that genetically modified foods be labeled. Some manufacturers and retailers are now voluntarily labeling foods and several governments abroad are requiring such labeling. Labeling, of course, should not be a substitute for safety; every geneti-

cally modified food should be safe. Yet, even assuming that those foods are as safe as conventional foods, they raise warning flags for people with severe allergies or concerns about general safety. Also, Moslems, Jews, and vegetarians may wish to avoid foods containing genes or gene products derived from animals. Others are concerned that genetically modified crops might cause environmental problems or believe that it is unethical to move genes between distant species. Regardless of what one thinks of the validity of those concerns, labeling would enable consumers to avoid biotech foods. Labeling is supported by most Americans, according to public opinion polls.[4]

The FDA should define the term biotechnology-free and allow marketers of foods that meet that definition to make a label claim. Foods containing genetically modified ingredients should be required to disclose that fact on labels (new legislation may be needed for this). If such a food contained a possible allergen, the ingredient label should indicate the source of the genes (for example, "contains [food] protein"). Finally, steps should be taken to ensure that labeling does not mislead consumers into thinking that genetically modified foods are much riskier or that genetically modified-free foods are much safer than other foods.

Meanwhile, people troubled by genetically modified foods can choose organic foods, the production of which minimizes risks due to pesticide residues in food and water, builds up soil, and protects wildlife.

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Providing universal coverage under national health insurance

Desirable and practical

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In Washington, the debate over health care is focused on Medicare reform and on developing a bill of rights for patients. Outside the beltway, however, universal health coverage is being debated in the Democratic primaries. The number of people without health insurance in the United States continues to increase by 1 million each year and now totals 44 million. It is estimated that this number may reach 60 million by 2007, a number that will definitely catch the attention of the federal government (S Findlay and J Miller, presentation to the National Coalition on Health Care, Washington, DC, May 1999).

Passing legislation to provide national health insurance would not only eliminate the anomaly that exists given that the US remains the only advanced economy in the world that refuses to provide essential health insurance cover for its entire population, but it would also facilitate the control of public spending in the future. The United States has been unable to provide universal coverage through any other mechanism. Relying on market forces has proven unsuccessful for three main reasons. The first is that historically, the idea that grew during the second world war that a person would be insured through their employer attracted commercial insurance companies to health care, and they started competing with the traditional Blues, the nonprofit insurance companies, for customers. Thus, the dynamics of health insurance in America were changed forever. Insurance companies introduced the concept of experience rating, which separates the population into those considered to be at low risk and those at high risk. Experience rating weakens the principle of distributing health care according to need instead of according to ability to pay.[1]

Health insurance companies have always practiced preferred selection through the use of experience rating, choosing healthy groups for themselves and leaving high risk groups to others. The companies that are successful in doing this are the ones that survive, and they are the ones that avoid caring for the uninsured.

Thus the second reason is economic: the insurance industry has no financial incentive to care for the uninsured. By their nature, insurance companies want to save money, and taking on 43 million subscribers who can't afford to pay their premiums conflicts with the financial interests of the companies. Moreover, insurance companies are interested in continuing to provide the best available coverage for their current subscribers. This extensive coverage costs money and these costs detract from any ideas of universal coverage that these companies might have. Insurance companies will inevitably work against the implementation of universal healthcare coverage. It is easier for them to continue to compete for low-risk subscribers than to try to provide coverage to all people.

The third reason that the United States has been unable to rely on market forces to provide universal coverage is cultural. The commitment in America to expanding the supply of health care that is technologically sophisticated promotes individualism and social divisiveness, focusing attention on the personal costs of universal coverage rather than on the benefits to the community.[2]

Another approach to providing health care is based on ideals of voluntarism, community, and cooperation. This approach would limit government intervention but, being based on community ideals, it would solve the problems of uninsurance and underinsurance. In practice, however, it has not worked. A nation that spends 14% of its gross national product on health care while leaving so many of its citizens without health coverage, and millions more with inadequate coverage, may safely conclude that voluntarism has not met the challenge of providing insurance to everyone.[3]

The last option is to work through the government, which other advanced nations have chosen to do. It is now both desirable and possible for the government to insure all Americans. It is desirable because there are increasing pressures on hospital revenues, which means that many hospitals will no longer be able to rely on "cross subsidies," the overcharging of insured patients to help pay for the care of the uninsured. It is estimated that if disproportionate share payments by Medicare and Medicaid (the additional funds given to hospitals that care for the uninsured) were eliminated, would experience a 7% decline in their operational margins.[4] Controls on spending on health care jeopardize even the limited access to care that uninsured people have.

Providing national health insurance is possible: the total share of governmental funding at the federal and state levels for our health service was about $650 billion in 1999 (including the federal tax subsidy of more than $100 billion available to the providers and beneficiaries of private group health insurance benefits). All of the governmental funding required to fund national health insurance is, therefore, being raised although not all of this sum could be reallocated to cover its costs.

The introduction of national health insurance would encourage discussions that would clarify the responsibilities of the government, employers, and the individual to fund the costs of health care. It would also open up discussion of the issue of rationing. We must provide universal coverage of essential care. But what are the essential healthcare costs that should be covered by national health insurance? It will not be easy for Congress and voters to agree on the fiscal responsibility that the federal and state governments should assume when they commit to providing essential medical care under the proposed plan. But the difficulties should also not be exaggerated. The federal government has set the terms for coverage for both Medicare and Medicaid since their implementation in 1966 and in the case of Medicare the public has responded positively. The federal government can reassure the people of its commitment to national health insurance by increasing funding for the program as the gross national product rises (which would allow access to new treatments) and by not reducing funding should the gross national product fall. Those people who want more and better coverage than the federal government will provide can either pay for it themselves or negotiate with their employer for additional health benefits. The government could offer new diagnostic and therapeutic techniques to all, after thorough evaluation.

Universal coverage has eluded the United States for a long time. The government should not miss this opportunity to introduce something so desirable and practical.

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Why health care is failing in a booming economy

Public health is a national investment, not a business

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The health care business is failing because it is not a business. Warning signs are ominous: 44 million Americans have no health insurance, and many more have inadequate protection; percentage increases in premiums will be in double digits. Many of our elected officials remain dogged in their belief that conventional business models can correct the shortcomings of our health care system. In frustration, politicians across the spectrum pursue the notion that legislative tinkering will solve the problems. However, we have a grave situation that the "businessification" of health care will not resolve.

We have been lulled into a false sense of confidence

that the crisis in American health care can somehow be reversed by reforms based on such euphemisms as gatekeepers, pathways, preexisting conditions, and risk pools. These "reforms" are essentially impediments to access, disguised as tools of efficient management. Those susceptible to this opiate point to the success of managed care in reducing costs to employers and to the salutary effect of this trend on the American economy.

Yes, health care costs have risen too rapidly in the past 20 years. Highly paid providers and administrators and exceedingly profitable health care corporations played a role, although less so than the effects of an aging population and the infusion of new technology arising from our commitment to scientific advancement. Nevertheless, our inability as a society to grapple with the decisions necessary to restrain the growth of health care costs should not prompt us to abrogate our responsibility to make difficult choices, hoping that a free-market, profit-based system will somehow resolve the problems.

Health care is an essential and increasingly costly service. Health care is not a business. If it were, it would be a strange one, indeed—one in which so many sectors of the market could never be profitable. People with AIDS; most children with congenital, chronic, or catastrophic illness; poor people; old people; and most truly sick people could never pay enough to make caring for them profitable. Nor is health care a right, although many think that access to it should be. As the civil rights movement taught us, rights must be set down explicitly if they are to be enjoyed by those who lack them.

"Health care is like any other product; you buy what you can afford." Sensing the large moral pitfall around the next corner, proponents of this tenet quickly add, "Basic health care, of course, should be provided." "Basic" is an important and difficult term. Suppose that two children, one in an uninsured family and one in a well-insured family, both developed leukemia, which is treatable and often curable. How would basic care be defined for the uninsured child? How would the basic cure differ from the more affluent, market-based cure? Cure must be the goal in both cases, and cure is expensive.

Executives of health maintenance organizations define their responsibility in terms of profit and stock prices to shareholders. The result, inevitably, is the restriction of access and the withholding of care. Both may be necessary to enhance efficiency and reduce costs. But do we want to relegate these decisions to health care analysts, or should we assert the public interest in these crucial ethical, societal, and medical issues?

We knowingly nod when told that the portion of our gross national product spent on health care is too high and that inefficiency, the "fat," results in a system that provides less effective care than in other industrialized nations, which spend a lower percentage of their gross national product. This argument is largely specious. American medicine engenders enormous respect worldwide. The dramatic decline in deaths from heart disease is salient evidence for the phenomenal success of technologically advanced American medical care, for those who can afford it.

Like education—also, in key ways, not a business—public health is a national investment. Could we justify a privatized educational system that denied access to slower learners unable to pay, the children who most need help? Would we acquiesce in such a self-destructive national policy? When we spend more on leisure than on health care, is the absolute current percentage of the gross national product for health care so inappropriate? We spend 22% more on just recreation, restaurant meals, tobacco, and foreign travel than we do on health care—50% more, if clothing is included (*Statistical abstract of the United States,* US Department of Commerce, Bureau of the Census, 1998). Our indignation should focus on eliminating real inefficiencies, defining and controlling excessive profits, and broadening access to our remarkable biomedical knowledge.

Our system is not a failure. Our problem is a failure of distribution—to extend care to all of those who need it and to recognize the importance of applying scientific research into outcomes to the broad-based delivery of health care. If citizens were offered state-of-the art American medicine in a comprehensive way, our public health outcomes would, without doubt, be unexcelled. The failure is the product of our notion that health care access depends on the ability to pay, a tacit acquiescence that has become, for many, a point of ideologic zeal. Payments to hospitals and physicians through the drive to enhance corporate profits or through government regulation will be restricted, and the need to improve the efficiency of our practice patterns and delivery system is critical. So, broad-based access to health care will still be an exceedingly expensive proposition. We must rid ourselves of the delusion that health care is a business like any other.

Awakening and coalescing public consensus is a mighty and politically perilous challenge. It will require leadership and rare courage to acknowledge that adequate health care is, in an age of verifiable efficacy, an appropriate goal for this nation. What we can afford may have to be redefined based on a thoughtful consideration of priorities; access to and withholding of care should be properly discussed in the public domain. These are, indeed, treacherous waters.

We should stop deluding ourselves and tinkering at the margins with bills for patient rights or drug benefits that apply only to those with insurance. We can create a system (perhaps incrementally) committed to universal access, decision making that is based on evidence, and innovative management that reflects an informed public consensus. We should couple our commitment to the advancement of biomedical science for the public good with the organizational skills that have generated our vibrant, competitive economy to a national policy of investment in health.

Mail

Utilitarianism and the perversion of the ethics of Hippocrates

To the Editor

In their guidelines for resolving conflict in cases of nonbeneficial or futile medical treatment, the San Francisco Bay Area Network of Ethics Committee continues the disturbing trend of medicine moving toward collectivism and the ethics of distributive justice.[1,2]

According to the tradition and ethics of Hippocrates that have served the profession well for 2500 years, physicians recognize that the interest of the patient is paramount. They, therefore, reject the so-called rational allocation of scarce and finite resources. Physicians who follow the ethics of Hippocrates place the interest of the individual patient above that of the collective, be that third-party payers, health care networks, or the "greater good" of society.[2] To do otherwise becomes the first step down the slippery slope of euthanasia—rationing by death.

Before the Nazis came to power in Germany, the Weimar Republic (a social democracy) paved the way for rational utilitarian ethics of the allocation of resources. As early as 1931, German physicians openly held discussions about the sterilization of "undesirables" and euthanasia of the chronically mentally ill. Hitler issued his first order for euthanasia in Germany on September 1, 1939. Organizations were set up for "health" programs under deceptively euphemistic terms. And so, before the Holocaust was officially implemented, 275,000 German citizens (non-Jews or Gypsies) were put to death.

Under the conflict resolution guidelines: "Nonbeneficial treatment is any treatment that, in the best judgment of medical professionals, produces effects that cannot reasonably be expected to be experienced by the patient as beneficial, or to accomplish the patient's expressed and recognized medical goals."[1(p287)] Under nonbeneficial treatment, the group writes: "Provision of indeterminate, long-term treatment to a patient who has no realistic chance of surviving outside an acute care hospital intensive care unit."[1(p287)]

Dr Leo Alexander, a psychiatrist and Chief US Medical Consultant at the Nuremberg war crimes trials, wrote: "If only those whose treatment is worthwhile in terms of prognosis are to be treated, what about the other ones? The doubtful patients are the ones whose recovery appears unlikely, but frequently if treated energetically, they surprise the best prognosticators."[3,4]

Physicians must be careful not to be used by social engineers as instruments to carry out a collectivist social agenda for rationing resources and deciding who lives and who dies. Although the concept of medical futility is indeed as old as Hippocrates, it was rejected then in favor of the moral tenor of "First do no harm," and it should be rejected now. To do otherwise would be to reject Dr Alexander's admonition that "from small beginnings the values of an entire society may be subverted."

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Author's response

The letter by Faria rails against our supposed attempt to sneak rationing into medical decision making. Strangely enough, however, nowhere in our article and guidelines is there any mention or even hint of "distributive justice," "social engineering," and certainly not the specter of "Nazism." Our group explicitly excluded financial considerations as a rationale for discontinuing or forgoing treatment. What we did seek to present was a procedure for increasing the number of informed people involved in decision making, not only to resolve conflict but to ensure that such decisions were being made on a medically sound basis and for compassionate reasons.

Physicians often make decisions to discontinue or forgo treatment at the end of life. Most such choices are made in concert with patients and/or their families and loved ones. For those relatively few cases where conflict persists, but the physician feels that the patient would not have wanted to be maintained in a twilight state between life and death and may even be suffering, sometimes "First, do no harm," indeed, must prevail. But harm can be subjective. Most Americans, given the choice, do not wish to be kept in a persistent vegetative state. Unfortunately, most Americans do not yet express such wishes beforehand through advance medical directives. Therefore, somebody has to make decisions, and physicians, being most likely to know patients' most accurate prognosis, sometimes have to take the lead here. They do so on behalf of their patients, not society or some other sinister interest. In fact, the most common criticism leveled at futility policies is that they might give physicians too much authority, not less.

Leo Alexander's analysis of the Nazi experience is, indeed, a landmark in modern medical history. More to the point, there is a large and growing literature on the ethics of futility in medicine and even an excellent popular book that concisely summarizes the issues.[1] Shouldn't one at least consider the nuances of the debate before aiming a specious shotgun at those who make an honest attempt to address the clinical and ethical realities of futility?

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Beware of bosses bearing beverages

To the Editor

We investigated a presumptive food-borne outbreak in Los Angeles County with a surprise ending. On August 27, 1997, an emergency department reported an outbreak of acute illness to the Communicable Disease Control unit in Los Angeles County. The acute illness affected 13 of 16 workers from a night-time construction site. During the night, all 13 workers who had a drink provided by their employer became ill with symptoms that included dizziness, nausea, vomiting, rapid breathing, nervousness, and numbness of the upper body. One worker had fainted; two workers said they had experienced increased strength. Symptoms began 15 minutes to 3 hours after consumption of the drink. No illness occurred in at least two of the three workers who did not consume the drink (risk ratio for drink consumption = indefinite; $P < 0.01$). Laboratory tests of specimens taken at the emergency department showed that the ill workers had rhabdomyolysis, as verified by a raised creatine kinase concentration with normal MB level, and a urinary screening test result was positive for amphetamines. All the workers recovered without being admitted to the hospital.

Immediately before the crew's departure to the construction site, the employer had provided them with thermoses of a drink containing "herbal ingredients" and had advised them "not to drink too much." A sample of the drink tested negative for amphetamine, but it could not be guaranteed that the sample had not been replaced or tampered with. The symptoms and laboratory test results were consistent with taking amphetamines; the beverage was epidemiologically linked to the illnesses.

This is the first reported outbreak of amphetamine poisoning associated with consumption of a contaminated drink. Similar cases may arise, however. Since first quantified in 1995, the number of clandestine methamphetamine laboratories destroyed in California has risen steadily (K Yamada, California Environmental Protection Agency, written communication, April 1999) indicating an increasing use of this drug. Physicians might see other patients presenting with amphetamine overdose, even in unusual settings, and should consider this and other toxic causes in disease outbreaks suspected to be of food-borne or waterborne origin.

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Acknowledgment

The *wjm* editorial team acknowledges the participation of Martin Anderson, Director of Adolescent Medicine, UCLA Department of Pediatrics, as a guest editor of the March 2000 *wjm*. We are grateful for the key role Dr Anderson played in the development of this special issue on adolescent medicine, and his regular membership of our editorial advisory panel.

Med.Pix

A baby with pink cheeks

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QUESTION: A 4-month-old male infant is seen because of a pink rash on his face and body. The mother says that the rash began on the child's cheeks and has spread to the body and legs. He is otherwise eating and sleeping well and has no obvious itching. The baby's diet is a cow's-milk based formula by bottle. The bowel movements and urine output have been normal. On further questioning, the mother remembered having some kind of rash as a child. She has hay fever and sometimes wheezes when she gets a cold. This is her first child, and he has had no episodes of asthma. As far as she knows, the father has never had asthma, rashes, or allergic rhinitis. There was no recent change in soaps, laundry detergent, or food.

On physical examination, the child is happy and social. Erythema and exudates are seen on the face, trunk, and popliteal fossa (figures 1, 2, and 3). The well-circumscribed, annular erythematous lesions on the back show some scaling. Erythema, exudate, and cracking of the skin are noted behind the right ear, as seen in figure 2. There is considerable scaling and flaking on the scalp, which is not easy to see in this view.

What conditions does this infant have, and what are the appropriate treatments?

Figure 1 Face

Figure 3 Popliteal fossa

Figure 2 Trunk

ANSWER: The infant has atopic dermatitis (atopic eczema) on the face and body. The facial involvement is the classic presentation of atopic dermatitis in this age group.[1] Further supporting this diagnosis is the strong family history of atopy in the mother, who has allergic rhinitis, asthma, and a childhood history of probable atopic dermatitis. In older children and adults, atopic dermatitis is more commonly seen in areas of skin folds, including the antecubital and popliteal fossae. This infant has involvement in the popliteal fossa but not the antecubital fossa. He also has widespread involvement over his back, indicating a more severe case. The weeping of exudative fluid indicates the presence of a bacterial superinfection. In addition, this infant has cradle cap, which may be a manifestation of seborrhea or his atopic dermatitis.

Treatment

In a child with a genetic predisposition to atopic dermatitis, treatment is directed to changing the environmental factors that stimulate it. Atopic dermatitis is an inflammatory condition that may be exacerbated by topical irritants or allergens, infections, and various foods. The bacterial superinfection is most likely due to *Streptococcus pyogenes* and *Staphylococcus aureus*. The child was treated with oral cephalexin suspension twice a day for 7 days. A weak topical corticosteroid, 1% hydrocortisone cream, was recommended to be applied to the affected areas twice a day to treat the inflammatory component of the atopic dermatitis and seborrheic dermatitis.

In choosing a topical steroid, the following patient characteristics need to be considered[2]: the severity and chronicity of the disorder, whether it is dry or exudative, the site involved—skin thickness, skin folds, face, genitals, hands, or feet— and the age of the patient. The steroid is chosen based on the intrinsic strength of the agent, its concentration, and the vehicle.

The least-potent steroids should be used on areas where the skin is thinnest, such as the face, genitals, and other intertriginous areas to avoid skin atrophy. Also, infants and children have greater surface area per body mass than adults. Because the risk and consequences of systemic absorption are greater, it is best to avoid the use of high-potency topical steroids in this age group.

For an infant who has considerable itching or sleep disturbance, oral diphenhydramine hydrochloride could be prescribed for use at night. Sedating antihistamines work best for pruritus. The mother was instructed to use only the mildest soaps or shampoo while bathing the infant. The physician ascertained from the mother that there was no family history of milk allergy. It was suggested that the infant be switched to a soy-based formula if the rash did not respond to the other measures.

Outcome

The infant responded well to the treatment and was taking a soy-based formula. One month later, he was seen with another exacerbation of the atopic dermatitis, and treatment was repeated, again with success. At that time, the physician discussed with the mother the long-term treatment of atopic dermatitis, including using topical emollients regularly after bathing the child and hydrocortisone occasionally for areas showing erythema and inflammation.

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Richard Usatine, MD; Section Editor, Med.Pix; 200 UCLA Medical Plaza, Suite 220 Los Angeles, CA 90095-1628; Fax 310-206-0181.

Written descriptions and electronic images may be submitted to: rusatine@mednet.ucla.edu.

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In the Public Eye

News and Features

Biotechnology company claims to have 97% of human genes on its database

Deborah Josefson, San Francisco

The US biotechnology company Celera Genomics has announced that it has the DNA sequence of 90% of the human genome in its databases, far outpacing both its own schedule and that of the publicly funded Human Genome Project, which was established in 1990. Celera, founded in May 1998 by Craig Venter, claims to have sequenced 81% of the genome on its own. It has inferred an additional 9% from the publicly available data published by the National Institutes of Health in Bethesda, Maryland and by the Sanger Centre in Cambridge, England. The company estimates that 97% of all human genes are already represented in its database, given a genome size of about 80,000 genes.

Celera, which began its sequencing project in September of 1999, expects to complete the entire sequence by June of 2000. The achievement, which ushers in the era of pharmacogenomics, is remarkable for its rapid pace and has widespread medical, ethical, and financial implications, especially because Celera is a private commercial enterprise.

The Human Genome Project is being conducted by eight university centers funded by the National Institutes of Health, and by the US Department of Energy and the Sanger Centre in Cambridge, England.

Celera takes a different sequencing approach from that of the public consortium. Celera uses a "shotgun" technique, whereby the DNA of a single anonymous male is sheared into many small and large fragments, which are then reassembled like one puts together a large jigsaw puzzle. This is accomplished by inserting the fragments into a plasmid vector and propagating them in *Escherichia coli* to produce millions of copies of each fragment. Linking DNA sequences of known length are added to fill in the gaps. When missing pieces are found, the linkers can be deleted. The millions of DNA base pairs are then reassembled with the help of a supercomputer. Celera's computer is believed to be the second most powerful in the world and is active 24 hours a day, 7 days a week. Two billion base pairs are sequenced by the Celera computer each month.

In contrast, the Human Genome Project is sequencing the DNA of multiple anonymous donors and mapping the genes to a precise location in a more painstaking manner. Their protocol entails inserting the genes into bacterial artificial chromosomes, mapping their positions on these chromosomes, and then sequencing them. The Celera approach skips the mapping and the use of bacterial artificial chromosomes, which can hold on average only 150,000 DNA bases each.

Furthermore, Celera benefits from the publication by the Human Genome Project of all newly sequenced DNA fragments on its website. Under the Bermuda Agreement, the public consortium is obliged to publish newly sequenced genes onto a publicly accessible website within 24 hours. Celera is not bound by such constraints, but takes advantage of them. Because Celera is a commercial enterprise and is obtaining patents for many of the genes that it is discovering, interesting medical and ethical questions arise. The concern has been raised that the success of Celera will lead to decreased federal funding for the public initiative.

The consortium's project is important because the data are free and available to everyone, whereas Celera may choose to withhold some information, particularly that related to genetic polymorphisms, which often disclose information about genes related to certain diseases. More worrisome is the proprietary use of the human genome. Venter has stated that he will eventually make the basic genome widely available but will sell gene sequences related to certain diseases to various pharmaceutical companies and to subscribers to its genome database. Academics and universities will be allowed to subscribe at reduced prices. Celera already has agreements with several blue chip pharmaceutical companies, including Pfizer, Novartis, and Rhône-Poulenc, to provide the gene sequences related to certain diseases.

Senators introduce bill to improve patient safety

Fred Charatan, Florida

A bill to improve patient safety is being introduced by two senators, following the publication last November of a report from the Institute of Medicine of the National Academy of Sciences, which claimed that medical errors kill from 44,000 to 98,000 Americans each year.

Mistakes involving the prescribing and dispensing of drugs were the most common errors, resulting in 7000 deaths a year, the report said. President Clinton immediately ordered the Federal Quality Interagency Task Force, which oversees federal health programs for 85 million Americans, to adopt all feasible techniques for reducing medical errors and to report back within 60 days. He has also included more than $50 million in the federal budget in new funding for government programs to reduce the nation's rate of medical errors.

Senator Edward Kennedy of Massachusetts, the senior Democrat on the US Senate's health committee, and Democratic senator Joseph Lieberman of Connecticut are introducing the Error Reduction and Improvement of Patient Safety Act. They have bipartisan support from Republican senators James Jefford of Vermont and Dr Bill Frist of Tennessee.

Among other provisions, the bill creates a national center for patient safety in the Department of Health and Human Services' Agency for Health Care Policy and Research. To reach the Institute of Medicine's goal of a 50% reduction in errors over the next 5 years, the American Hospital Association is working with the Institute for Safe Medication Practices, Huntingdon Valley, Pennsylvania. The Institute is a national leader in the safeguards and reporting of drug treatment and founded the US Pharmacopoeia Medication Errors Reporting System.

Many hospitals now operate computerized programs to make safety checks on drugs ordered for patients. At the LDS (formerly, Latter Day Saints) Hospital in Salt Lake City, Utah, the main computer automatically checks each patient's allergies and drug interactions against laboratory results and other data.

About one third of US hospitals have a system for doctors to enter orders for tests and drugs into a computer, which the Institute of Medicine described as a powerful method for preventing treatment errors. Desktop or mainframe computers can be supplemented by the use of laptop and hand-held devices.

A safety system based on hand-held devices for monitoring drug treatment is now being installed at 170 Veterans Affairs hospitals. A bar code is attached to the pills that the patient takes daily. Nurses swipe the codes on their badges to identify themselves, register the codes on the drug package and the patient's identity bracelet, then check a hand-held device to make sure the codes match.

Breast cancer researcher accused of serious scientific misconduct

Scott Gottlieb, New York

The only trial showing that bone marrow transplants for breast cancer could prolong life is now being sharply questioned after the study's lead investigator was accused of serious scientific misconduct.

The trial, led by Werner Bezwoda, of the University of Witwatersrand, Johannesburg, South Africa, looked at high dose chemotherapy followed by bone marrow transplantation in women whose cancer had spread to 10 or more lymph nodes.

The results of Bezwoda's research were presented last year at the American Society of Clinical Oncology's annual meeting, and his was the only study to show clearly a survival benefit in the high dose regimen.

The University of Witwatersrand has accused Bezwoda of "misrepresenting results of a clinical trial" after an investigation aimed at substantiating Bezwoda's findings failed to produce records needed to confirm his data. Bezwoda denied that there was "any falsification of the data" but refused to elaborate and referred additional questions to the university.

AP Photo/ASCO, Todd Buchanan

Williams Peters, Jonas Bergh, and Werner Bezwoda (l to r) discuss value of chemotherapy and bone marrow transplants in fighting breast cancer

Previously, the results of four breast cancer studies comparing high dose chemotherapy plus either bone marrow or stem cell transplant with standard chemotherapy found no conclusive benefits from the more aggressive treatment.

The research now in question was the only rigorous study to show any significant benefit to patients who undetwent the high dose treatment plus bone marrow transplants. Bezwoda's study involved 154 South African women. After 5 years, 25% of women in the high dose group had relapsed, compared with 66% in the group receiving standard treatment. In the high dose group, 17% had died, compared with 35% in the standard group.

"Certainly it's upsetting," said Joseph Bailes, president of the American Society for Clinical Oncology. "Obviously it concerned the University in South Africa enough that they brought it to our attention," he said.

Doctors involved in the research into the transplants had known for several months that a team of US doctors was going to South Africa to audit the data from Bezwoda's study, according to Eric Weiner, director of the Breast Oncology Center at the Dana Farber Cancer Institute in Boston. "My understanding is that they were unable to find the records that would substantiate the results," he said.

Medicine and Money

Guidelines for advertising on health web sites: Who's guarding the Koop?

The Internet is a promising and popular tool for the global dissemination of health information to the public. According to one estimate, "health sites draw two thirds of all online users at least once."[1] Unfortunately, the power of the Internet to facilitate quick, inexpensive, and worldwide publication is also a weakness when it comes to information about health. Distinctions between trained medical professionals and quacks, tested drugs and untested compounds, and advertisements and content are difficult to make. Furthermore, the global nature of the Internet defies most current nation-specific laws regulating the practice of medicine or sales of health-related products based on unverified health claims.[2]

The use of the Internet has encouraged the blurring of distinctions between content areas and advertising. Criticism of the well-traveled health information web site, drkoop.com, started by the former US Surgeon General C Everett Koop,[3] however, illustrates why such ambiguity is a problem for health care professionals and why the criticisms bring to mind images of foxes and henhouses.

CRITICISMS OF DRKOOP.COM

The main criticisms of Koop's web site have been his failing to disclose his financial relationships with advertisers and to clearly distinguish between editorial content and advertisements. For example, a prospectus filed with the Securities and Exchange Commission, but not listed on the web site, states that Koop could receive a percentage of revenues derived from sales of health-related services and products that are presented on the web site.[4] As another example, the site lists hospitals and health centers as "the most innovative and advanced health care institutions across the country" but does not state that the hospitals on the list have paid a fee to be included.[3] In defense of his web site, Koop has asserted, "I cannot be bought" and that he cannot help it if some people are bothered by the idea of a former public servant making money, particularly because physicians have always been paid for their services.

CONFLICTING INTERESTS FOR HEALTH CARE PROFESSIONALS

The ethical issues raised by advertising on drkoop.com are clearly those of conflicts of interest. Contrary to popular belief, stating that a conflict of interest exists is not an accusation of moral lapse, but rather is pointing out that a primary duty may be in conflict with a secondary (possibly competing) duty to or interest in another party.[5,6]

Contrary to Koop's assertion, if he stands to gain personally from sales of products advertised on his web site, he has a conflict of interest. When patients pay physicians for services, a conflict of interest is built in. A distinction must be made, however, between conflicts that are unavoidable and known to the patient or public and those that are not. Furthermore, a conflict of interest must be acknowledged as a problem precisely because often it is impossible to know or prove that one has or has not been influenced by a competing interest. Ample evidence suggests that physicians are affected by the potential for personal financial gain, perhaps unwittingly and despite the best intentions.[7-9]

Likewise, if promotional information is not disclosed as such and is portrayed as educational or as endorsements based on appropriate evaluation criteria, a conflict exists between the interests of the readers or patients and those of the advertisers or the company. If an organization provides health care information with the aim of educating the public, the organization must bear the same responsibilities that health care professionals have in ensuring the quality and integrity of the information. Any organization whose mission includes disseminating health care information, and any person receiving this information, should be concerned with the following questions:

- Is it appropriate to support the educational mission with advertising?
- If there is advertising in conjunction with the educational information, has the content of the information been influenced by the advertiser?
- Is the promotion of the advertised products appropriate to the aims of the educational mission? Or does the advertising detract?

ADVERTISEMENT POLICIES IN ANALOGOUS SITUATIONS

The publication of synthesized health news and information on a web site for public and professional use is analogous to several other situations in the health professions with respect to conflicts of interest, including the publication of medical journals and the endorsement of products by medical professional organizations.

Summary points

- Health care professionals who provide health and medical information on the Internet have a professional duty to ensure its quality and integrity, just as they would if the information were in print
- Advertising to support health web sites can create a conflict of interest for the creators of the site
- If advertising supports such web sites, great care should be taken not to undermine the integrity of the educational information
- One way to militate against conflicts of interest is to clearly label and separate editorial content from advertising and promotional activities
- Public trust in physicians will be eroded if educational activities on the Internet are seen as being used to further professionals' financial interests through promotional activities

Publication of medical literature

The primary function of most medical journals is to provide clinical and research information for professional and lay audiences. This function is diminished if journals are seen as contributing to the unwarranted promotion of specific advertised products (for example, by publishing misleading or inaccurate ads[10] or implying endorsement of a product by ad placement). The accuracy of advertisements is regulated by federal laws. However, selection and placement of ads within medical journals is determined by the editors of journals.

The American Medical Association (AMA) and the journals of the American College of Physicians and other medical publications have published guidelines for the selection and publication of advertisements. These, like many other medical publications, generally limit the advertising they allow in their journals to commercially available products or services related to medical practice, education, or health care delivery.[11,12]

Medical journals also face a conflict of interest when publishing work that has been financially supported by companies whose products are related to the published material. Journals have developed extensive guidelines on competing interests of authors.[13] These guidelines usually ask that authors disclose their financial interests, but at least one journal has decided not to publish commentaries or review articles by authors with conflicting financial interests.[14]

Endorsement of products by medical professional organizations

Several medical professional or health-related organizations endorse products, and some have developed policies about endorsements. These policies are relevant to medical web sites because there is evidence that the linkage of names of trusted organizations to products is, not surprisingly, construed as implicit endorsement of the advertised products, companies, or industries (State Attorney General Report). *What's in a nonprofit's name? Public trust, profit and the potential for public deception.* A preliminary multi state report on commercial/nonprofit product marketing. April 1999).

The American Dental Association (ADA) has a long-standing policy of endorsing dental products used by the public or dental professionals. Endorsement is limited to products related to dental care and requires that products satisfy a series of safety and efficacy tests. Advertisement content is also evaluated by the ADA to ensure accuracy and balance. Payment by manufacturers covers testing costs only. In contrast, the American Heart Association and the AMA have been criticized for endorsing products without independent certification.[15,16] Such arrangements potentially mislead consumers and may impair the ability of the organizations to later criticize products that they now endorse.

The AMA has devised new guidelines for sponsorship and endorsements that are in keeping with its mission "to promote the art and science of medicine and the betterment of public health." Guidelines now include a restriction on accepting grants from tobacco or alcohol companies, and the product certification program limits fees to the costs of conducting the program.

SPECIFIC GUIDELINES FOR ADVERTISING ON HEALTH WEB SITES

To maintain credibility, organizations posting health web sites need to avoid conflicts of interest and the appearance of conflicts. Both not-for-profit and for-profit organizations need to examine carefully the extent to which advertising is necessary to support their web sites. Existing guidelines for medical and health web sites are either broad[11] or restrict advertisement to health-related products and companies. Such restrictions, however, may actually pose more of a conflict of interest for health organizations[9] and unnecessarily limit sources of revenue.

The following guidelines have been developed for health organizations that are contemplating advertising on their web sites or digital publications. They are currently being used by the California Center for Health Improvement (CCHI), a nonprofit organization whose mission includes dissemination of health policy information for a policy and general audience through paper publications and a web site (www.policymatters.org). Like many other non-profit health organizations, CCHI is funded by grants from private foundations and private clients and is considering allowing advertising on their web site to generate additional revenue.

IDENTIFYING CONFLICTS OF INTEREST IN SELECTING ADVERTISERS

The organization should determine the sources of funding of companies that wish to advertise on or sponsor web pages. The primary source of funding for foundations, support groups, or other organizations is not always obvious. For example, a smoker-rights group states that it is supported by membership fees, although most of its funding comes from the tobacco industry. Sometimes the prospective advertiser hires an advertising agency to create the ad copy and to find potential advertising sites. Organizations should communicate directly with the advertiser or sponsor rather than intermediaries. The organization should maintain the right to remove an advertisement if it finds that an advertiser or sponsor has misrepresented itself.

If the primary mission of the advertiser or the health effects of the product are in direct conflict with the mission of the organization or with public health goals generally, the advertisement should be rejected. For example, companies that sell tobacco fall into this category because tobacco is known to pose serious threats to public health that outweigh its benefits. Some products, however, such as alcoholic beverages, may decrease the risk of some diseases while increasing the risk of others. Thus, benefits should be weighed against possible dangers.

If the primary mission is completely unrelated to the organization's or public health goals and the products do not have health effects that conflict with these goals, consideration should be given to accepting advertising but maintaining control over some aspects of it. Products or companies, however, that may not seem health related or have no apparent health effects may at a later date be determined to have such effects. Advertisements should be reevaluated periodically for such changes.

If the primary mission is related to the organization's or public health goals, but not necessarily in direct conflict, and the health effects of the product are not in conflict, consideration should be given to accepting advertising but maintaining control and rights of disclosure. Health care–related companies, such as drug companies or managed care networks, are not necessarily inappropriate ad-

vertisers on a web site. Special care must be taken, however, to militate against conflicts of interest when considering advertisers that could be affected by policies published on the web site.

General selection and management strategies

Once an organization has decided that an advertiser is acceptable for its web site, the organization has many options for deciding how to control the content and placement of ads. Some (non-mutually exclusive) possibilities for limitations are to limit advertisements to a specific size relative to the web page; limit the use of "pop-up" windows linked to advertisements; limit the number of advertisements per web page and per advertiser; separate ads from text by location in the area of each web page dedicated to advertisements, borders, and/or color or other visual aids; clearly label advertisements as being such; prohibit advertisements on certain key pages, such as the home page or table of contents page; prohibit direct links from advertisements to external commercial sites; and limit the total revenue that is accepted annually from any one advertiser.

Limits specific to advertisement or web pages

If an advertiser's product, company, or industry is related to the content of a web page—for example, a company that manufactures nutritional supplements wants to place an ad for a folic acid supplement on a web page summarizing policies about the prevention of birth defects—the organization has a number of (non-mutually exclusive) options to decrease the conflict of interest:

- Restrict the placement of ads (such an ad should not appear where it may be mistaken as an endorsed treatment);
- Restrict the type of advertisement—show the company logo only, as opposed to an ad for a specific product; and
- Opt for sponsorship by an organization (with disclosure on the sponsored web page), rather than advertisement of a specific product.

Disclosure

The web site should disclose information that might not already be evident if it poses a conflict of interest. For example, if the logo of a drug company that manufactures a vaccine is displayed on a page about immunization policies, it could be explained that the vaccine mentioned in the policy is or is not manufactured by the company whose logo appears on the web page.

Karen Bodenhorn, president and chief executive officer of the California Center for Health Improvement, helped develop the guidelines for web advertising.

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COMMENTARY

Growing pains of the Internet age

The Internet is the new medium of business, communication, education, services, and entertainment. Most people had never heard of the World Wide Web 5 years ago, but business, schools and universities, governments, and individuals have since begun to provide a wide range of services to previously unreachable audiences. This exciting phenomenon is generating enormous economic growth and creating more personal wealth than anyone could have anticipated. This gold rush has certainly led to lapses in judgment and ethical behavior. The financial opportunities for Internet pioneers are unprecedented, and Mildred Cho suggests that we need new Internet "e-thics" guidelines that will address potential conflicts, primarily by placing additional restrictions on advertising. That perspective is, perhaps, myopic.

Untruthful, harmful, or misleading content is of concern to any responsible Internet developer, but so are privacy, data security, and illegitimate business practices. In addition, we all need to be aware of the widening

gap that is developing between the segments of the population that have access to online information and those—mostly elderly or poor persons and people in developing countries—who do not.

The Internet is a different medium for traditional business, not a new business itself. As such, it does not need completely new legislation or regulation. Existing regulations should guide the development of Internet policy. The challenge must be to expand the electronic marketplace while recognizing the unique nature of the medium and the differing needs of the global online community.

The Association of Medical Publications has long had a code of ethics that prohibits the exchange of editorial material for any monetary compensation or advertising consideration. A member publication will not publish advertisements that might be mistaken for its own editorial material without labeling such material clearly as an advertisement. Leading medical journals also subscribe to advertising placement guidelines developed by the Vancouver Group that restrict the placement of advertisements next to related editorial material. The Accreditation Council for Continuing Medical Education restricts the placement of advertising within an experience of continuing medical education. Publications directed to consumers have similar standards developed by the American Society of Magazine Editors that prohibit editors from working on advertising inserts or "noneditorial" material that appears in their publications. Most major publishers prohibit their own editors from having any equity stake in companies that they cover. It is generally accepted that these standards, prepared years ago for print products, are to be applied equally to all online activities.

Many of the stories detailing potential conflicts have involved new information companies and groups that have, in some cases, not been around long enough or were being run by people without sufficient editorial experience to be aware of the existing standards. Many of these Internet start-ups are establishing ties with established media channels (CBS/Medscape, CNN/WebMD) and are beginning to realize the need for strong standards of editorial integrity and control. The Internet Content Coalition, a nonprofit trade association of advertising-driven consumer sites, posted guidelines on ad placement in 1998. An alliance of 16 electronic health companies called HiEthics is working on a self-regulation code of conduct for advertising, sponsorship, and content, with a consensus document hoped for in March 2000. They are focusing on at least three minimum standards: financial disclosure, clear separation of content and commerce, and science-based labeling. They agree that health sites should fully disclose any financial incentives for the site developer that are related to editorial content. They also agree that information developed to promote a product or device in exchange for compensation should be easily distinguishable from editorial content. The third leg calls for the referencing of sources of content along scientific lines, including the last dates that the information was modified, to help readers decide if the information presented is from a credible scientific source.

Because the accuracy of advertising information is crucial, the scientific validity of the product messages, who receives them, and how they are delivered take on heightened significance. Dozens of legitimate advertising agencies that specialize in preparing commercial messages for pharmaceutical and medical device companies have been in business since the 1920s, and they communicate complicated information in a form that is clear and understandable. Their clients, the manufacturers, are ultimately responsible for the content of the messages, so I can find no justification for excluding them from the process.

Because we are dealing with issues of expression, government involvement should be considered only as a last resort. Except in rare cases, existing law and government regulation is sufficient to guide the conduct of online pharmaceutical advertising, and the US Food and Drug Administration has wisely indicated that they will not be publishing any new Internet guidance at this time.

I applaud Cho for attempting to address the "e-thical" issues of the Internet. I suggest that all of us involved in the issue use the tools currently available to ensure the quality of electronic information and not try to reinvent the wheel.

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Correction

The references to accompany Dr Schwart'z Letter to the Editor in the November/December issue are as follows:

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Media Watch

Oregon's suicide video

Michael A Glueck
Robert J Cihak

Over the objections of those who warned it could have dangerous consequences, a public access television channel in Eugene, Oregon, ran a video showing viewers how to commit suicide and how to help others commit suicide. The video, "Final exit," was written and narrated by Derek Humphry, a proponent of suicide and practitioner of assisted-suicide. Humphry is founder of the Hemlock Society and author of a book called *Final exit.*

The video was shown despite warnings from physicians and politicians that it could encourage desperate, vulnerable, or mentally ill people to act on impulse. Cindy Noblitt and her husband, Mick Garvin, the producers of the show, had political reasons for showing the video. They hoped it would raise opposition to the Pain Relief Promotion Act, a bill being debated in the US Congress.

In the video, Humphry describes in a soft, soothing, calming, methodical, and grandfatherly way the details of "self-deliverance." He shows how he mixed lethal drugs in coffee to help his first wife, Jean, take her life. Humphry lists the best drugs for a "comfortable" death and shows how to crush them with a spoon and mix them into applesauce.

He lists barbiturates from the most to the least effective and suggests taking them with beta blockers to lessen the time until death. To reduce the odds of failure, he shows how to place a plastic refrigerator bag over the head. Humphry does not mention that he and his first wife discussed assisted suicide only once, when she was in hospital with breast cancer. Nine months later, she asked, "Is this the day?" Humphry said, "Yes." Her question could well have been a "suicidal gesture." Was she really saying "Please pass the applesauce?" Or was she really asking for support and understanding? We'll never know for sure, but a question such as "Is this the day?" is not a free and open request for assisted suicide.

Oregon voted to legalize physician-assisted suicide in 1994, becoming the first state in the United States to do so. The legalization has confused mental health professionals, some of whom no longer believe that they have a duty to prevent all suicides.

Wesley J Smith suggests in his study, *Forced exit: the slippery slope from assisted suicide to legalized murder* (New York: Times Books/Random House, 1997), that all the premises about death with dignity have already been proved false. In addition, the public continues to be deceived about what is at stake in the debate about euthanasia. Smith is very concerned about the message sent to dying people. He says that the suggestion of assisted suicide confirms the dying person's fears about their own uselessness. It reinforces their worries about being burdens and their fears of dying in untreated pain. Smith says terminally ill people have every right to have their lives valued as much as any other person who becomes suicidal.

> Freedom of speech does not relieve anyone of accountability for what they say

Oregon Governor John Kitzhaber said that he hopes other cable television providers will not show the tape. "I hope that news organizations will be extremely judicious in using the tape as part of their coverage of the story," he said. "It is grossly irresponsible to produce a how-to tape on suicide, given its potential to influence the acts of those who are not of sound mind, especially troubled youth."[1]

According to Smith, Oregon now has the ninth highest suicide rate of any state in the country. Rita Marker, Executive Director of the International Anti-Euthanasia Task Force, is also concerned that the video could influence children. "The suicide rate for children age 10 to 17 has increased over 500% in the last 30 years," she says. "This makes suicide the second leading cause of death for that age group."[2]

Even some advocates of assisted suicide have called the video irresponsible. "The video takes assisted dying out of the context of medical care and puts it in the context of hardware store," said Barbara Coombs Lee, who helped enact Oregon's law as director of the Compassion in Dying Federation.[1]

At best, the airing of this video is offensive because of its potential for harm. People in the media must realize that having the right to do something doesn't always make it right to do it. The First Amendment does not require the media to act foolishly. Freedom of speech does not relieve anyone of accountability for what they say. As with shouting "fire" in a crowded theater, everyone should be held responsible for their actions.

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Original Research

Outbreak of boils in an Alaskan village: a case-control study

ABSTRACT ● **Objective** To determine whether taking steam baths was associated with furunculosis and to evaluate possible risk factors for the occurrence of boils during a large outbreak in Alaska. ● **Design** A cohort study of village residents, a case-control study, and assessment of environmental cultures taken from steam baths. ● **Setting** Village in southwestern Alaska. ● **Participants** 1 adult member from 77 of the 92 households in the village was interviewed; 115 residents with at least one boil occurring between January 1 and December 12, 1996 were considered to be cases; 209 residents without a boil acted as the control group. All 459 village residents were included in the cohort study. ● **Main outcome measure** Rate of infection among all residents and residents who regularly took steam baths, risk factors for infection, and relative risk of infection. ● **Results** 115 people (25%) had had at least one boil. Men were more likely to have had a boil than women (relative risk 1.5; 95% confidence interval 1.1 to 2.2). The highest rate of infection was among people ages 25-34 years (32/76; 42%). No children younger than 2 years had had boils. Boils were associated with using a steam bath (odds ratio 8.1; 3.3 to 20.1). Among those who used a steam bath, the likelihood of developing boils was reduced by routinely sitting on a towel while bathing, which women were more likely to do, and bathing with fewer than 8 people. Of the 93 samples taken from steam baths, one *Staphylococcus aureus* isolate was obtained from a bench in an outer dressing room. ● **Conclusion** Using a steam bath was associated with developing boils in this outbreak in a village in Alaska. People should be advised to sit on towels while using steam baths.

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INTRODUCTION

Furunculosis was described in some of the earliest historical accounts of Alaska. Boils were the most prevalent illness among Kodiak Islanders at the beginning of the 18th century.[1] During his travels among the natives of the lower Yukon during 1842-1844, Zagoskin ranked abscesses as one of the most commonly occurring conditions.[1] More recently, in 1984 an epidemic of staphylococcal disease was described among residents of another village.[2, 3] Elsewhere, furunculosis and cellulitis have been associated with skin abrasions and bruises among river guides[4] and a football team[5]; an association with local skin injury was not apparent in the 1984 outbreak in a village in Alaska.[2]

In December 1996, the Alaska Division of Public Health investigated a large outbreak of furunculosis in a village. Healthcare providers were concerned that transmission might be occurring through the residents' use of the 22 steam baths in the community. We sought to determine if transmission was occurring through the use of steam baths and to evaluate possible risk factors associated with the occurrence of boils.

Summary points

- In December 1996 the Alaska Division of Public Health investigated a large outbreak of furunculosis
- Healthcare providers in the village were concerned that transmission was occurring during the use of the 22 steam baths in the community
- Sharing a steam bath with more than 8 people, sharing soap, and being male increased the risk of developing a boil
- Those who use steam baths should sit on a towel while bathing to reduce the likelihood of developing boils

Background

The Alaska Native village where the 1996 outbreak occurred is situated on a river in southwestern Alaska. It consists of an area with largely older homes (region 1), a mixed area with both new and older homes (region 2), and an area with only new homes (region 3). Although some homes in region 1 and many homes in regions 2 and 3 have showers, most people bathe at one of the 22 stream baths located in residents' backyards. A typical steam bath consists of an outer dressing room and an inner steam room with benches and a woodburning stove. In general, men and women take steam baths separately. There is one clinic in the village; hospitals and additional clinics are accessible by plane.

In late October 1996, the physician who provided care for the village reported to the Division of Public Health that there had been 80 visits to the clinic for boils during 1996 and that *Staphylococcus aureus* had been isolated from purulent material from several patients. Six isolates of *S aureus* were then submitted to the Centers for Disease Control and Prevention for further identification by pulse-field gel electrophoresis, and all had a similar pattern. In early September 1996, healthcare providers in the village distributed fliers urging owners of steam baths to clean their baths with bleach. In addition, people were asked to

sit on a towel while bathing and to consider using their own washbasins. (Washbasins are used to pour cool water over the bather while in the steam bath.)

PARTICIPANTS AND METHODS

Identification of population and bathing practices

For the purposes of the study, boils were defined as tender, erythematous, fluctuant skin lesions occurring between January 1 and December 12, 1996. People who had had one or more boils were identified by a review of charts at the village clinic and by interviews during the door to door survey. Clinic personnel provided a list of all current village residents by household. The sex and date of birth of the resident, the region in which they lived, and whether the household had a steam bath were indicated. The rate and the relative risks of infection were determined by the cohort study.

A structured interview with an adult member of each household was attempted at every house in the village during the survey. Two researchers conducted all of the interviews (MGL and BJM). Information was obtained from respondents about their practices while steam bathing and about the practices of all other household members. Respondents provided information about whether they routinely sat on a towel while having a steam bath, whether they routinely had a bath with fewer than 8 people, whether they routinely used their own soap in the steam bath, and whether they bathed daily or less frequently. For the case-control study, a case was defined as a person with a boil. The control group comprised village residents who had not had a boil and who had been interviewed or whose family member had been interviewed about their use of steam baths.

Data analysis

Multivariate analyses using logistic regression were completed for the case-control study using the demographic and general variables and the information on practices while steam bathing. Demographic and general variables analyzed included age, sex, race, whether another household member had had a boil in 1996, whether the person used a steam bath, whether the household had a washing machine, whether clothes were washed with hot water or bleach, whether there was a shower in the house, and the region of residence. Each final model consisted only of those variables that contributed significantly at the $P \leq 0.05$ level.

Collection of samples

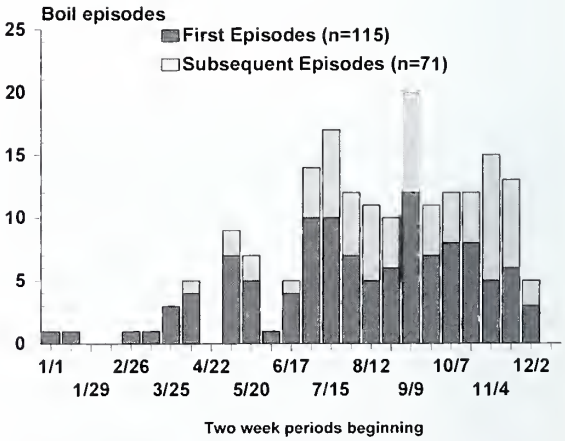
Environmental cultures were obtained from 9 of the 22 steam baths; six steam baths were cultured before and after use in the evening, and three steam baths were cultured only after use. Surfaces cultured included the bench and wall of the outer dressing rooms and the bench, wall, and floor of the inner steam room. Soap and washbasins were also cultured. All isolates of *S aureus* from cultures of purulent material from boils were also analyzed. Pulsefield gel electrophoresis testing was completed at the Centers for Disease Control and Prevention on the *S aureus* isolates obtained.

RESULTS

Interviews were completed at 77 (84%) of 92 households, accounting for 396 (86%) of 459 village residents. Information on whether the participant used a steam bath was available for 320 (81%) of the 396 residents. Demographic and general variables were available for all 320 residents who had provided information about their use of steam baths and an additional four people who had visited the clinic with a boil. Data on practices while bathing were available for the 242 (76%) residents who had taken steam baths.

Incidence

Of the 459 village residents, 115 (25%) had had at least one boil during the period studied; 105 were identified during chart review and 10 others by interview. The outbreak peaked in September (figure). A total of 186 boils were reported. Boils ranged in size from 0.5 cm to 12 cm with a mean of 3.4 cm. Two people had been hospitalized with cellulitis. During 1995, five people (1%) had visited the clinic because they had a boil. During 1996, 74 (30%) of 248 men in the village had had a boil compared with 41 (19%) of 211 women in the village (relative risk 1.5; 95% confidence interval 1.1 to 2.2). Similarly, 26 (37%) of 71 male heads of household had boils compared with 2 (10%) of 21 female heads of household (relative risk 3.9;



Number of people diagnosed with first and subsequent infections with boils during two-week intervals, January 1 through December 12, 1996

Table 1 *Rate of infection by age group during an outbreak of furunculosis among residents in a village in southwestern Alaska, 1996*

Age (years)	Number of people	Number of people with boils	Rate of infection (%)	Relative risk (95% CI)
≤4	69	8	12	1.0
5-14	118	32	27	2.3 (1.1 to 4.8)
15-24	65	12	18	1.6 (0.7 to 3.6)
25-34	76	32	42	3.6 (1.8 to 7.3)
35-44	54	8	15	1.3 (0.5 to 3.2)
45-54	39	11	28	2.4 (1.1 to 5.5)
55-64	22	9	41	3.5 (1.6 to 8.0)
≥65	16	3	19	1.6 (0.5 to 5.4)
Total	459	115	25	

1.0 to 14.9). The highest rate of infection was among people aged 25-34 years (32/76; 42%); the lowest was among children 4 years of age and older (8/69; 12%) (table 1). There were no boils among the 23 children who were younger than 2 years. Only one child younger than 2 was known to have had a steam bath. Only one person stated that the boil had occurred after local injury to the skin at the same site.

The incidence of boils in different regions of the village varied from 30% (31/102) in region 1 to 21% (25/120) in region 2, and 25% (59/237) in region 3. The relative risk of having a boil among those living in region 1 compared with those living in other regions was 1.3 (0.9 to 1.8). The number of steam baths also varied by region with 6 (5.9/100 people) in region 1, 4 (3.3/100 people) in region 2, and 12 (5.1/100 people) in region 3. Rates of infection did not vary according to the presence of a household steam bath (relative risk 1.0; 0.7 to 1.5).

The case-control study compared 115 residents with boils with 209 residents without boils and showed that having one or more boils was associated with taking steam baths (odds ratio 5.7; 95% confidence interval 2.4 to 14.4), having another household member with a boil (3.5; 2.0 to 6.4), and being male (1.9; 1.2 to 3.2). Seven people who had never used the steam baths had had a boil. Being a case was not significantly associated with washing clothes with hot water (odds ratio 0.9; 0.5 to 1.5), washing clothes with bleach (0.6; 0.3 to 1.2), having a washing machine (0.7; 0.4 to 1.1), or the presence of a shower in the house (0.7; 0.4 to 1.2).

Among those who used steam baths, those who routinely bathed with fewer than 8 people were less likely to have a boil than those who bathed with more than 8 people (odds ratio 0.3; 0.1 to 0.6). Having a steam bath less often than once a day protected people against getting boils (odds ratio 0.5; 0.3 to 1.0). Using personal soap instead of sharing soap also protected people (0.3; 0.1 to 0.6) as did routinely sitting on a towel on the bench in the steam bath (0.3; 0.2 to 0.6). Women were more likely than men to sit on a towel (76/91 (84%) vs 28/96 (29%); $P < 0.0001$) and use personal soap (39/91 (43%) vs 19/96 (20%); $P = 0.001$). Showering less than twice a week did not significantly increase the likelihood of developing a boil (1.8; 0.5 to 6.1) among those who used steam baths. Boils were significantly associated with using two particular steam baths in the village ($P < 0.05$) and one at a fishing camp outside of the village ($P < 0.05$). Those who used another particular steam bath were protected against getting boils.

Sites of boils

Boils were most commonly found on the buttocks and posterior thigh (81/186; 44%), abdomen (25/186; 13%), and arms (18/186; 10%). Sixty-two of the 115 (54%) people with boils had a boil on their buttocks or posterior thigh. Of the seven people who had boils but did not use the steam baths, only one (14%) had a boil on the buttocks or posterior thigh. Having a boil on the buttocks or posterior thigh was associated with steam bathing (odds ratio 19.5; 3.2 to 796.9), with not routinely sitting on a towel (4.0; 1.9 to 8.8), and with having another member of the family with a boil (2.0; 1.0 to 3.9).

Multivariate analysis

Multivariate analysis of demographic and general variables resulted in a model that included four variables (table 2). Taking steam baths remained strongly associated with having a boil (odds ratio 8.1; 3.3 to 20.1). In a multivariate analysis of steam bathing practices, routinely sitting on a towel and bathing with fewer than 8 people remained the only significant factors that protected people against

Table 2 *Demographic and general variables identified by logistic regression as being most strongly associated with developing boils among 324 residents of a village in southwestern Alaska, 1996*

Variable	Odds ratio (95% CI)
Uses a village steam bath	8.1 (3.3 to 20.1)
Other household member has a boil	4.6 (2.4 to 8.9)
Male sex	2.3 (1.3 to 3.9)
Household doesn't wash clothes with bleach	1.5 (0.8 to 2.9)

Table 3 *Steam bathing practices of 242 village residents**

Practice	Odds ratio (95% CI)
Usually sits on towel while steam bathing	0.3 (0.1 to 0.8)
Uses own soap while steam bathing	0.4 (0.2 to 1.1)
Usually steam bathes with <8 people	0.3 (0.2 to 0.8)

*Identified by logistic regression as being most significant in protecting people against developing boils, southwestern Alaska, 1996.

developing boils (table 3). In the univariate analysis, bathers who used their own soap were protected against developing boils (table 3).

Gel electrophoresis

Pulse-field gel electrophoresis was completed on 18 *S aureus* isolates obtained from boils. Fourteen isolates (78%) had the same pattern; the other four each had a different pattern. The one *S aureus* isolate from the 93 cultures taken from the steam baths was obtained from a bench in the outer dressing room; it had the same pattern on gel electrophoresis as one of the four isolates without the majority pattern from the boils. Resistance to methicillin was found among all six isolates from boils tested for antibiotic sensitivity in December 1996; further testing was unnecessary once resistance was identified.

DISCUSSION

Boils resulting from infection with *S aureus* were associated with the use of steam baths in this village in Alaska. Controlling the outbreak was problematic. Health education notices, which recommended cleaning steam baths regularly and sitting on towels while bathing, were posted during the peak and subsequent decline in the number of cases (September-December 1996). However, people continued to develop boils during the spring of 1997. Temporarily closing the steam baths was not an option since use of the steam baths is a social activity and a means of bathing. The residents rejected the idea of placing portable showers at the steam baths to be used before and after bathing. Instead, healthcare providers tried to provide additional health education messages through their distribution of fliers. People with boils were asked not to use steam baths. Residents were asked to sit on towels in the steam baths, to use their own soap, and to wash their hands before and after each bath. Those who owned the steam baths were asked to clean them with a dilute solution of chlorine bleach. Healthcare providers were asked to avoid using antibiotics unless severe cellulitis or systemic infection was present and to treat the boils with incision and drainage instead.

In the outbreaks of furunculosis that occurred among river guides[4] and a football team,[5] the boils were most commonly located on the extremities and were associated with injury to the skin. In the 1984 outbreak in another village in Alaska[2] and in the outbreak in this village, the boils were most commonly located on the buttocks and posterior thighs and were rarely associated with local skin injury. During the 1984 outbreak it was suspected that a recently opened public sauna might have facilitated transmission; however, an association was not established.[2] Among the river guides, no new cases were reported after the use of hexachlorophene to scrub the skin became routine, surveillance for cases was improved, prompt medical treatment was provided, and those with boils were isolated. In the 1984 outbreak, the rate of infection among residents remained above 25% 1 year later despite a health education program emphasizing the need for prompt medical treatment and improved personal hygiene.[2]

In outbreaks of infections with methicillin-resistant *S aureus* in hospitals, mupirocin and isolation have been used successfully to eliminate nasal carriage and establish control.[6] Neither treatment with mupirocin nor isolation was believed to be an option in this outbreak, since some residents with boils continued to use a steam bath although they had received consistent and repeated health education messages not to do so.

Large outbreaks of furunculosis in villages in Alaska have probably occurred periodically. The outbreak described here was associated with steam bathing and steam bathing likely contributed to the 1984 village outbreak. Ideally, protective practices, including sitting on a towel on the steam bench, should be encouraged so that outbreaks may be reduced in size and frequency. When an outbreak occurs, medical treatment should be limited to incision and drainage and local wound care. The use of antibiotics should be restricted only to those patients who have severe cellulitis or systemic illness.

Annie Chocknok and Richard Ascher assisted us in investigating the outbreak by helping to decide which strategies would be most effective; Gary Hancock performed the pulse-field gel electrophoresis testing; Michael Beller and Ronald L Moolenaar constructively reviewed the manuscript; and Elizabeth Funk offered valuable general advice.

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COMMENTARY

Using towels and soap in steam baths could reduce infection

The article by Landen et al describes an association between furunculosis and the use of steam baths in an Alaskan village. Their investigation identified a comparatively unusual source of an outbreak of dermatitis—*Staphylococcus aureus* in "recreational" water—and the challenge of implementing simple preventive measures that would change a cultural practice. The boils occurred primarily on the buttocks and the backs of the upper thighs and were not preceded by apparent skin trauma. However, the furuncles were likely to have been preceded by folliculitis, and the authors present a convincing case that transmission occurred primarily through sitting in the steam baths. In this outbreak *S aureus* entered through intact skin in contrast with other outbreaks in which trauma to the skin was a predisposing factor for skin infections (primarily boils) among those going rafting, members of football teams, and meat packers.[1-4] The use of steam baths could result in trauma that was not apparent (for example, from sliding on wooden seats).

The combination of sitting on communal seats for long periods of time (facilitating person to fomite to person transmission) in heat at "incubator temperatures" (enabling the organism to persist and grow) and sweating (leading to opening of skin pores and entry of the organism), probably contributed to transmission and infection. In contrast, communal toilet seats have not been associated with outbreaks of disease. Outbreaks of *Pseudomonas aeruginosa* dermatitis have been associated with hot tubs, and outbreaks of dermatitis caused by *Schistosoma* species have been associated with lakes.[5] While the authors emphasize the transmission of organisms from one person to another while steam bathing, bathers in this setting are also at risk of infection by their own flora.

The findings of this paper add to earlier reports of outbreaks of furunculosis in Alaskan villages by looking for causes and suggesting a practical preventive measure. The authors found that sitting on a towel in the steam bath was protective: 39% (data not shown) of people with furunculosis used a towel compared with 68% (data not shown) of the controls in a multivariate model of residents who reported using a steam bath. Assuming that the 120 people included in the multivariate model are representative of those who use the steam baths, 70% of the cases of furunculosis among people who did not sit on a towel (42% of all cases) could have been prevented by the use of a towel (the preventable fraction is 1 – the odds ratio).[6] This practice should be promoted. The effectiveness of other possible preventive measures, such as showering before using the steam baths, could not be assessed either because too few people used them or because the measures were too difficult logistically to be implemented.

Future outbreaks could probably be prevented or limited if those residents using the steam baths consistently used their own towels and followed their steam bath by soaping up even when there was no evidence of an outbreak. Ultimately, the community will need to decide whether maintaining the current practice of using steam baths without protective measures is worth the risk of future outbreaks. There is potential for controversy if the use of towels is made compulsory: there is the tension between the inconvenience of a preventive measure, which brings about the loss of a personal freedom (that is, the choice of whether to sit on a towel in a steam bath), and the morbidity that could result from not adhering to a preventive measure (the risk of repeated outbreaks of furunculosis in the community).

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Active management of labor: a cost analysis of a randomized controlled trial

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ABSTRACT **Objective** To compare the costs of a protocol of active management of labor with those of traditional labor management. **Design** Cost analysis of a randomized controlled trial. **Methods** From August 1992 to April 1996, we randomly allocated 405 women whose infants were delivered at the University of New Mexico Health Sciences Center, Albuquerque, to an active management of labor protocol that had substantially reduced the duration of labor or a control protocol. We calculated the average cost for each delivery, using both actual costs and charges. **Results** The average cost for women assigned to the active management protocol was $2,480.79 compared with an average cost of $2,528.61 for women in the control group ($P = 0.55$). For women whose infant was delivered by cesarean section, the average cost was $4,771.54 for active management of labor and $4,468.89 for the control protocol ($P = 0.16$). Spontaneous vaginal deliveries cost an average of $27.00 more for actively managed patients compared with the cost for the control protocol. **Conclusions** The reduced duration of labor by active management did not translate into significant cost savings. Overall, an average cost saving of only $47.91, or 2%, was achieved for labors that were actively managed. This reduction in cost was due to a decrease in the rate of cesarean sections in women whose labor was actively managed and not to a decreased duration of labor.

Many obstetricians are concerned about the increase in the rate of cesarean sections in the United States. In 1970, the overall incidence of cesarean section was 5%.[1] By 1983, the rate had increased to 21%; it peaked at 24.7% in 1988[2,3] and remains greater than 20% of all deliveries.[4] Lowering the rate of cesarean delivery decreases maternal risk for associated morbidity and should, therefore, significantly decrease the costs of delivery.

The active management of labor, first introduced by O'Driscoll et al in the 1960s at the National Maternity Hospital in Dublin, Ireland,[5] is a group of interventions initially devised to ensure short labors in nulliparous women. In addition, active management of labor was noted to be associated with a lower cesarean section rate,[6,7] which was thought to be due to a decrease in the number of cesarean deliveries performed for dystocia. Three randomized studies have been done to evaluate the efficacy of active management of labor.[8-10] These studies have demonstrated significant decreases in the duration of labor and the incidence of infectious morbidity, as well as a trend toward lower cesarean section rates.

Rogers et al[10] reported their experience with a protocol of active management of labor at the University of New Mexico Health Sciences Center, Albuquerque. A randomized trial, carried out between August 1992 and April 1996, compared two protocols, one using an active management of labor and the other a standard management of labor. No significant differences between the patient populations, neonatal outcomes, the incidence of uterine hyperstimulation, the use of epidural analgesia, infectious morbidity, or cesarean delivery rates were observed. A significant reduction in the duration of labor and a trend toward fewer cesarean deliveries were observed in the group whose labor was actively managed. In the present study, we undertook to evaluate the differences in cost of the two protocols. We hypothesized that the reduction in the duration of labor for women whose labor was actively managed would translate to significant cost savings. This is a cost-minimization analysis of a prospective trial of a protocol of active management of labor.

PARTICIPANTS AND METHODS

The New Mexico active management of labor trial has been previously described in detail.[10] Briefly, nulliparous women (N=405) were randomly assigned to an active management of labor (n=200) or a control protocol. The active management protocol consisted of a strict diagnosis of labor based on regular palpable uterine contractions and a cervical effacement of at least 80%. The women were then admitted to the hospital for labor and delivery. Amniotomy was performed within 1 hour of admission, and a regimen of high-dose oxytocin was begun at 6 mU/min and increased 6 mU/min every 15 minutes until seven contractions in 15 minutes or adequate labor progress was obtained. Dilatation of 1 cm per hour during the first stage of labor and 1 cm of descent per hour during the second stage of labor defined adequate progress.

The control protocol consisted of admission to the hospital for labor and delivery with a cervical dilatation of 4 cm in the presence of regular uterine contractions. Amniotomy was performed at the attending physician's discretion. A regimen of low-dose oxytocin was begun at 1 mU/min and increased by 1 mU/min every 30 minutes until adequate labor was achieved.

Cost-minimization evaluations compare treatment strategies for patients whose treatment outcomes are similar, to reveal which treatment strategy, if any, results in decreased costs.[11,12] Although actual costs represent the best estimate of the true value of a service or procedure, they are often available only in the form of charges, which give a relative value to the service or procedure.[11] We assumed the perspective of a third-party payer and used charges as proxies for costs when actual costs were not available.[13] When possible, costs were used. For material costs, the actual cost of disposable equipment was used. The cost of disposable equipment used on the postpartum ward was determined for women following cesarean section, operative vaginal deliveries, and vaginal deliveries. For labor costs, the hourly cost to care for a woman was determined by dividing the average hourly wage of a labor and delivery nurse at our institution ($17.76/h) by the average number of patients assigned to each nurse. Likewise, the hourly cost to care for a patient on the postpartum ward was determined by dividing the average hourly wage of a postpartum nurse at our institution ($18.75/h) by the average number of patients assigned to each nurse. For cesarean sections, the hourly wage of an average scrub technician and neonatal nurse was also included. Wages are similar to charges and may not reflect the actual cost of supplying the provider to care for the patient. Because each arm of the study used the same providers, a relative comparison of charges between the two groups can be made.

To reflect the relative room costs, the hotel fee for the use of the labor and delivery and postpartum rooms per hour of use was calculated. The cost of the physician was included by using hospital fees for a vaginal delivery or cesarean section. Ancillary services such as laboratory costs and diagnostic services were not included because no differences in the postpartum complication rates of chorioamnionitis, hemorrhage, or fetal outcomes were found between the two arms of the study. For the cost analysis, the duration of labor and delivery was defined as the time of admission to the hospital until one hour after delivery. The duration of labor was defined as the time between the diagnosis of labor until delivery. Time spent on the postpartum ward was defined as one hour after delivery until discharge from the hospital, as recorded by the discharging nurse.

For statistical analysis, we used unpaired *t* tests for the comparison of means, the Fisher exact test, and χ^2 analysis where appropriate. Bivariate analysis of variance was used where subgroups were compared. Data were expressed as the mean±SD. Significance was set at $P< 0.05$. All costs are expressed as dollar values for 1996. Using our common SD of $529.00 for the costs, our sample sizes are able to detect $148.00 differences in average costs between the two protocols, with 80% power analysis and an α of 0.05.

RESULTS

Rogers et al[10] reported that the duration of labor in the group whose labor was actively managed was significantly shortened by 1.7 hours compared with that in a control group (active management, 9.7 hours, vs control group, 11.4 hours; $P= 0.001$). In addition, a trend toward a decreased cesarean section rate was observed in the actively managed group that was not statistically significant (active management, 7.5%, vs control group, 11.7%; $P= 0.36$). No difference was observed in the average duration of stay on the postpartum ward (active management, 35 hours, vs control group, 37 hours; $P= 0.10$). No differences were observed between the groups in age, gestational period, or ethnicity. Although the average dose of oxytocin was higher in the active management group than in the control group, there was no difference in the number of patients requiring augmentation of labor (active management, 56%, vs control group, 51%; $P= 0.39$), nor were differences noted between the two groups in the incidence of epidural analgesia, uterine hyperstimulation, or postpartum hemorrhage. Apgar scores, fetal weights, and admissions to the newborn intensive care unit were not significantly different.

The total cost for the care of each patient was calculated (table). The average cost for a woman randomly assigned to the active management of labor was $2,480.79, and the average cost for a woman allocated to the control group was $2,528.61 ($P= 0.55$). This amounts to an average saving of $47.82 per patient, or 2% of the average cost for women managed by the active management of labor protocol. For women whose infant was delivered by cesarean section, the average cost for the active management of labor was $4,771.54 compared with

Costs of labor by mode of delivery*

Method of delivery	Actively managed labor, $	Control, $	
Total deliveries	**(n = 200)**	**(n = 205)**	***P***
Materials	193.13 ± 83.21	136.21 ± 100.00	0.16
Labor	188.78 ± 86.00	185.42 ± 77.87	0.68
Fee	1,320.03 ± 245.90	1,352.95 ± 299.54	0.23
Hotel	848.86 ± 424.16	854.04 ± 377.88	0.90
Total	2,480.79 ± 765.85	2,528.61 ± 789.48	0.54
Vaginal deliveries	**(n = 185)**	**(n = 181)**	***P***
Materials	101.00 ± 30.6	102.00 ± 34.10	0.85
Fee	1,250.00 ± 0	1,250.00	>0
Hotel	769.06 ± 278.48	749.26 ± 234.72	0.47
Total	2,294.04 ± 350.83	2,267.00 ± 298.43	0.43
Cesarean deliveries	**(n = 15)**	**(n = 24)**	***P* Value**
Materials	394.60 ± 17.48	392.41 ± 17.82	0.71
Labor	370.17 ± 126.86	328.82 ± 72.12	0.20
Fee	2,179.00 ± 0	2,116.50 ± 3.06	0.44
Hotel	1,827.77 ± 648.32	1,631.17 ± 329.80	0.21
Total	4,771.54 ± 778.18	4,468.89 ± 550.96	0.16

*Values are given as mean ± SD US dollars for 1997. Total deliveries = vaginal deliveries plus cesarean deliveries in each column.

$4,468.89 for women in the control group (P= 0.16). The average cost for normal spontaneous vaginal deliveries in the active management of labor group was $2,294.04 compared with $2,267.00 in the control group (P= 0.56). We further calculated the respective costs of actively managed patients and control patients according to materials costs, labor costs, fees, hotel costs, and mode of delivery (table).

In a threshold sensitivity analysis, to reverse our finding of no significant difference in costs, the average total cost for all deliveries would have had to differ by $152.00 (rather than the nearly $48.00 difference observed).

DISCUSSION

In this study, we tried to determine if the decreased time in labor and the trend toward a decreased cesarean section rate with a protocol of active management of labor would translate into a significant cost savings. Actual hospital costs and hospital charges were used. Although actual costs are a better measure of the relative value of a service or procedure, they can be difficult to determine for hotel costs and the cost of the services of salaried personnel, such as physicians. This use of charges to make relative group comparisons has been done previously.[11] Hospital charges vary significantly from institution to institution, and they are frequently based solely on an admitting diagnosis or primary procedure, but they give an approximation of the relative cost of a patient's stay. As expected, hospital costs are lower than charges. For example, the charge for a patient on the labor and delivery ward at our institution is $841.00 for the first hour and $62.00 per hour for each additional hour, whereas the cost for nursing care on the labor and delivery ward is $8.88 per hour and the cost for disposable equipment for an average labor is $17.17, excluding the delivery. A limitation of using costs on a per-patient basis is that many costs associated with providing support personnel, equipment, and structural facilities are impossible to determine. Here we have further detailed our analysis of the relative contribution of costs of disposable materials, labor costs, physician fees, and hotel costs. None of the costs or charges used varied significantly between the two groups. Our power analysis revealed that with the number of patients in this study, we would be able to detect a difference in relative costs or charges between the two arms of the study of $148.00 or greater. Differences in cost of less than this may not be economically relevant because outcomes were similar.

One of the weaknesses of our study is the inability to include all the tenets of the active management of labor protocol as used by O'Driscoll et al,[5,6] specifically, the use of one-on-one labor attendants, or doulas. The use of a labor attendant reduces the risk of cesarean section and the need for pain medication and may translate into considerable cost savings.

The average cost for the care of actively managed patients was less than that for patients managed according to the standard protocol. This translates into a small cost saving of $47.82 for each patient whose labor was managed according to the active management of labor protocol. The active management of labor protocol was slightly more expensive when broken down by the mode of delivery. A cesarean delivery in an actively managed patient cost an average of $302.65 more than the cost of a cesarean section for control patients. Normal vaginal deliveries cost an average of $27.00 more than that for the control group. The overall cost savings in the active management of labor group must then be due to the reduction in the cesarean section rate rather than the shortened labor because the increased cost of deliveries in this group is offset by the decreased rate of cesarean sections. There is no clear explanation for the increased cost associated with deliveries in the actively managed group. Differences in costs between groups could not be attributed to the cost of oxytocin.

The decrease in costs, should a reduction in cesarean section rates remain consistent, would translate into substantial savings in patients needing multiple cesarean sections. For example, the average cost of a cesarean section was $4,771.54 for women whose labor was actively managed and $4,468.89 for women in the control group. With a cesarean section rate of 7.5% for actively managed women versus 11.7% for controls, and a rate of repeated cesarean section for patients who have had a primary cesarean section of about 40% at our institution, the savings in a reduction in the number of repeated cesarean sections would appreciate for subsequent pregnancies.

Although the previously confirmed decreased duration of labor for the group having active management did not translate into dramatic cost savings, the reduction in the duration of labor still may be clinically and economically important. The protocol for the active management of labor has consistently been a safe management plan for both infants and their mothers. It is reasonable to assume that many patients would consider a decrease in the duration of labor of 1.7 hours to be appreciable and desirable. With the safety and equivalent costs of the active management of labor protocol relative to a standard labor management protocol, women's preference should be studied to determine if widespread use of this labor strategy should be implemented.

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COMMENTARY

The active management of labor: is it worth the cost?

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In 1969, O'Driscoll and colleagues, in a seminal work published in the *BMJ*,[1] detailed the active management of labor to prevent primigravid patients from laboring more than 24 hours. Not until 1992 was a similar active-management protocol shown in a randomized trial to shorten labor.[2] Since that time, several randomized controlled trials have examined various components of active management and have shown reductions in the length of labor, with a trend toward fewer cesarean deliveries.[3,4] None of the studies found an increase in adverse outcomes with this approach.

Given this evidence, why has active management (as described by O'Driscoll and coworkers) not become the standard of care in the United States? First, the original protocol calls for one-to-one support by nurses of women in labor, something not routinely offered in US hospitals. Second, O'Driscoll and associates describe as a fundamental mistake the current common practice of admitting patients before they are truly in labor—a useful way to ensure adequate pain control for a primigravid woman with painful contractions but no cervical change, but perhaps a substantial impediment to reducing the high cesarean delivery rate. Financial incentives may also be misaligned in the current US health care system. That is, attending obstetricians may have little interest in shortening labor and decreasing the use of cesarean sections if, as a result, they must work harder or get paid less for their time.

The cost analysis by Rogers and colleagues of the active management of labor attempts to show whether a third-party payer would have incentive to adopt such an approach.[5] Cost analysis can play an important role in guiding the decisions of group health care providers, particularly decisions about two broad groups of interventions: those that improve health but increase cost, and those that worsen health but save money.[6]

Shortening labor and possibly reducing the rate of cesarean delivery rate would be considered by most to be improvements in health. Assuming that vaginal delivery is preferred over cesarean, and shorter labors are better than longer, then if active management saves money, or is neutral with regard to costs, it should be adopted. In general, we do not require interventions that improve health to save money. If an intervention costs money, then a cost-benefit analysis would be needed.

The analysis by Rogers and associates depends on the former case being satisfied because they do not attempt to weigh the health consequences of active management. They conclude that cost savings derived from active management are minimal, if they exist at all. This finding is less well grounded than it first appears because of the way the authors handle a common problem in cost analysis. Specifically, faced with the difficult task of estimating costs, they substitute charges and sum the two. Their rationale—that they are assuming the position of a third-party payer—does not fully justify this decision. An indemnity insurance plan would be interested only in charges; that the hospital may charge more than it costs to deliver some services and less than it costs to deliver others would not matter to them one bit. A closed-panel health maintenance organization, on the other hand, would care only about costs; indeed, "charges" may be a meaningless term in that setting.

Summing costs and charges has the effect of muddying the waters with regard to the worth of active management. Consider what would happen if the cost of disposable equipment and charges for labor and delivery (two items for which the authors estimated cost) dropped dramatically in the active-management arm, but the hospital charge was unchanged (as would be expected if obstetric services are charged by diagnosis and procedure, not time). The large drop in cost would be swamped by the lack of change in charges. Even if such a drop produced a significant fall in overall cost, a third-party payer could hardly be faulted for not caring. After all, the cost savings have gone to the hospital's bottom line.

Even if charges reflected actual costs, other problems with adding costs and charges arise because charges may be two or three times the actual cost (accounting for, among other things, profit). For an item for which the authors estimated cost, a $1 drop in cost from the control to the active-management arm would end up as a $1 drop in the total. For an item measured by charges, a $1 drop in cost might be reflected as a $2 or $3 drop in charges.

Evaluating cost alone, and doing it from society's perspective (rather than that of a third-party payer) would eliminate some of these problems. Charges can be converted to costs, although imperfectly, using cost-to-charges ratios available at most hospitals. Taking society's viewpoint also removes the problem of cost shifting inherent in this type of intervention. That is, if an intervention reduces hospital costs by shifting them to other parts of society (for example, discharging patients 48 hours after a cesarean section, thereby increasing care costs for patients' families), it looks good from the third-party perspective but bad from society's perspective.

Is active management worth the cost? Despite the flaws in their analysis, Rogers and colleagues make a strong argument that it is. Using charges and costs together is unlikely to hide a major increase in cost from this program. We do not usually demand that improvements in health come with cost savings, but rather that they do not cost too much. Providing shorter labors without complications at no cost is a pretty good deal. Further analysis might demonstrate cost savings, particularly if society's benefit from a reduced cesarean section rate is evaluated.

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Note to our readers

This month, for the first time, we recognize the contributions of our "hanging committee" on the *wjm* masthead. This group of knowledgeable and talented individuals volunteer a great deal of time and expertise to the journal. Experts in clinical epidemiology, statistics, and study design, they scrutinize all manuscripts previously subjected to peer review and found to merit serious consideration. They not only help decide on suitability for publication, but also provide methodologic advice and suggestions to prospective authors.

The "hanging committee" is not where manuscripts are sent to their execution. Rather, the term derives from an old British Medical Association custom (and one shared by many other privileged groups in the United Kingdom), where a special committee served as final arbiter of whether, and precisely where and how, a new portrait of some dignitary should be hung.

Whether and how to "hang" our submissions, in public, for the enjoyment and edification of our readers, is just about our most important job. We, therefore, are delighted to have this opportunity to thank this group of experts. We are lucky to have them.

Research Digest

Poor-quality studies suggest that vitamin B_6 use is beneficial in premenstrual syndrome

QUESTION

Is the use of vitamin B_6 (pyridoxine hydrochloride) effective for relieving overall premenstrual symptoms and depressive premenstrual syndrome?

DATA SOURCES

Studies were identified by searching MEDLINE (1966-1998), EMBASE (1988-1996), PsychLIT (1974-1997), CINAHL (Cumulative Index to Nursing and Allied Health) (1982-1997), and the Cochrane Controlled Trials Register with the terms premenstrual syndrome, pyridoxine, premenstrual tension, late luteal phase dysphoric disorder, and premenstrual dysphoric disorder. Bibliographies of relevant articles were scanned, and pharmaceutical companies were contacted.

STUDY SELECTION

Published and unpublished studies in any language were selected if they were randomized, double-blind, placebo-controlled studies for which data could be acquired. Studies involving multivitamin supplements were included if the supplement contained ≥50 mg of vitamin B_6. Authors were contacted if additional information was required.

DATA EXTRACTION

Data were extracted on participants, dose and preparation of vitamin B_6, outcome measures, results, withdrawals, side effects, and quality scores. Main outcome was subjective lessening of overall premenstrual symptoms, and a secondary outcome was a decrease in depressive premenstrual symptoms. High-quality studies had scores of 3 on the Jadad scale (maximum: 5 points) and of 6 on the authors' quality rating scale (maximum: 8 points).

MAIN RESULTS AND CONCLUSIONS

Ten studies with 12 comparisons met the inclusion criteria. Sample sizes ranged from 31 to 434 patients (mean: 98 patients). Doses ranged from 50 mg per day (3 comparisons) to 600 mg per day (1 comparison). Quality scores on the Jadad scale were 1 (3 studies), 2 (1 study), and 3 (3 studies) points. On the authors' quality rating scale, scores were 3 (2 studies), 4 (5 studies), 5 (2 studies), and 6 (1 study) points. Quality scores were not used to exclude trials from the analysis because few high-quality studies were found.

Pooled results showed that vitamin B_6 relieved premenstrual symptoms (combined odds ratio: 2.12; 95% confidence interval: 1.80-2.48). One study led to heterogeneity ($P<0.001$), and the removal of this study results in a combined odds ratio of 1.69 (95% confidence interval: 1.39-2.06). The three high-quality studies according to the Jadad scale showed a benefit for the use of vitamin B_6, whereas the one high-quality study according to the authors' quality rating showed no effect; this study had low power for detecting any differences. No dose response was found in the nine trials. A meta-analysis of randomized, double-blind, placebo-controlled trials shows that the use of vitamin B_6 relieves overall premenstrual and depressive premenstrual symptoms. Most studies were of poor quality.

KM Wyatt, PW Dimmock, PW Jones, et al.

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1999;318:1375-1381.

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Commentary

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Epidemiologic surveys have estimated that as many as 75% of women with regular menstrual cycles experience some physical and psychological symptoms premenstrually.[1] Vitamin B_6 (pyridoxine hydrochloride) use is one of the numerous treatments suggested for premenstrual syndrome (PMS). Wyatt and colleagues have systematically reviewed trials comparing the efficacy of vitamin B_6 with placebo in women with PMS. Although their meta-analysis includes a few more trials than a previous review published in 1991,[2] they, too, conclude that "there is insufficient evidence of high enough quality to give a confident recommendation for using vitamin B_6 in the treatment of premenstrual syndrome" (p 1378).

The authors used extensive data sources and rigorous selection criteria to identify 10 relevant ttials. They used two different scales to evaluate the methodologic quality of each trial. Nine trials (after excluding 1 trial that caused statistical heterogeneity) were included in the meta-analysis, although only four were rated as high-quality studies on either of the two scales. The nine trials differed in many ways, including the outcomes, the dosage of vitamin B_6, and whether the intervention was vitamin B_6 alone or as the ingredient of a multivitamin. Moreover, the authors did not consider the severity of premenstrual symptoms.

This is an important variable because women who meet criteria for premenstrual dysphoric disorder, the more severe form of PMS, usually do not respond to more conservative interventions, such as vitamin B_6.[3] The lack of a dose response adds to the uncertainty about the effectiveness of vitamin B_6 for PMS.

This review highlights the need for well-designed trials to compare the use of vitamin B_6 with placebo to establish more accurate recommendations for treatment. In the meantime, what do clinicians tell patients? Given that vitamin B_6 is readily available, relatively inexpensive, and generally has minimal adverse effects in doses of less than 200 mg, clinicians may suggest that patients take ≈ 100 mg per day as a conservative treatment option before considering drugs with stronger evidence of effectiveness such as selective serotonin reuptake inhibitors.

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A psychoeducational program increased knowledge and decreased sexual risk behaviors in young adults with genital herpes

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QUESTION

In young adults with genital herpes, does a group psychoeducational intervention led by nurses decrease sexual health risk and improve psychosocial adaptation?

DESIGN AND SETTING

Randomized (allocation concealed),* unblended, controlled trial of 6 months' duration in a metropolitan area in California.

PARTICIPANTS

A total of 252 adults (mean age: 27 years; 77% women; 80% white; 70% single; 84% employed; 10% lesbian or gay; mean education: 15 years; and mean annual income: $22,000) with confirmed symptomatic genital herpes diagnosed within the previous 5 years were included in the study. Adults with histories of inpatient treatment for psychiatric conditions or alcohol or drug misuse were excluded. Follow-up was 87%.

INTERVENTION

One hundred thirty-one adults were allocated to group psychoeducational sessions (3 sessions, 90 minutes each) led by a nurse. Problem solving, skills building, and peer and professional support were emphasized. Topics included information and feelings about herpes, how to disclose the diagnosis to others, preventing the transmission of the disease, safe sexual behavior, and substance use. Resource materials were provided. One hundred twenty-one adults were offered the same intervention after the 6-month study was complete (control group).

MAIN OUTCOME MEASURES

Sexual health risks measured using the Herpes Knowledge Scale to assess knowledge, the Sexual Health Risks questionnaire to measure sexual behavior (condom and spermicide use, number of sexual partners, and disclosure of herpes status), the Protection from Sexually Transmitted Disease questionnaire to measure self-efficacy about the prevention or transmission of genital herpes and other sexually transmitted diseases, and psychosocial adaptation measured using the Profile of Mood States checklist and Beck Depression Inventory.

*Information provided by JM Swanson

MAIN RESULTS AND CONCLUSIONS

All analyses were adjusted for baseline scores. By 6 months, adults in the psychoeducational intervention group had higher knowledge scores (mean: 95% vs 91% correct; P<0.001, used condoms more often (87% vs 74% of the time; P<0.001), used spermicide more often (41% vs 20% of the time; P<0.001), and planned to tell potential sexual partners about herpes more often (P=0.02). Similar results were shown at 3 months. The groups did not differ for number of sexual partners in the previous 3 months; number, length, or severity of outbreaks in the previous 3 months; mood states (anxiety, depression, anger, fatigue, vigor, or confusion); total mood disturbance; depression; or feelings of self-efficacy to prevent the transmission of sexually transmitted diseases.

A psychoeducational intervention led by a nurse for young adults with genital herpes increased knowledge of the disease and decreased sexual risk behaviors, but did not improve psychosocial adaptation.

Commentary

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Genital herpes is a chronic viral sexually transmitted disease. Stressors associated with the disease include the fear of telling new sexual partners[1] and depression.[2]

Psychoeducational interventions are used to increase coping skills, acceptance of the illness, and cooperation with treatment and rehabilitation.[3] This type of intervention has been used successfully to address sexual issues such as AIDS and sexually transmitted diseases.[4]

The generalizability of the study to other populations is limited because the sample included English-speaking literate participants, of whom 77% were women and 80% were white. Six months of follow-up was short, and no cost-effectiveness analysis of the psychoeducational intervention was provided. Although the intervention was successful in decreasing sexual health risks, it did not have an effect on any of the measures of psychosocial adaptation. This was probably because the participants in this study were already in the normal range for these measures.

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A low dose of albuterol by metered-dose inhaler with a spacer was as effective as higher doses by metered-dose inhaler or low doses by nebulizer in children with mild acute asthma

QUESTION

In children with mild acute asthma, is albuterol (Salbutamol) delivered by a metered-dose inhaler (MDI) with a spacer (standard low dose or higher, weight-adjusted dose) as effective as albuterol delivered by a nebulizer?

DESIGN AND SETTING

Randomized, blinded, controlled trial in a hospital emergency department in Canada.

PATIENTS

Participants were 90 children aged 5 to 17 years (mean: 9.2 years; mean baseline forced expiratory volume in 1 second [FEV_1]: 62.8%) who presented with acute asthma exacerbation between 8 AM and 10 PM, could reliably perform pulmonary function testing, and had a baseline FEV_1 of 50% to 79% of the predicted value. Exclusion criteria included the first wheezing episode, the use of albuterol within 4 hours, concurrent cardiopulmonary disease, and hypersensitivity to albuterol.

INTERVENTION

Thirty children were allocated to a standard low dose of albuterol by MDI with a clear plastic 140-mL spacer device with a mouthpiece (2 puffs, 100 µg per puff); 30 children were allocated to a higher, weight-adjusted dose of albuterol by MDI with a space (6-10 puffs [>100 µg per puff], depending on weight). The MDIs were shaken between each puff, and the children took five to six normal breaths through the mouthpiece between each puff. Thirty children were allocated to albuterol (0.15 mg/kg) by jet nebulizer with a tight-fitting mask. Albuterol mixed with 3 mL of normal saline solution was given by the nebulizer with an oxygen flow of 6 to 8 L/min over 15 to 20 minutes. To ensure patient blinding, each child used two MDIs and a nebulizer (the allocated treatment dose and two placebo doses).

MAIN OUTCOME MEASURES

Primary outcome was percentage of predicted FEV_1 measured with a handheld spirometer. Secondary outcomes included respiratory rate, heart rate, oxygen saturation (room air), and scores for accessory muscle, wheezing, and dyspnea. Outcomes were assessed before treatment and 30, 60, and 90 minutes after treatment.

MAIN RESULTS AND CONCLUSION

Analysis was by intention to treat. The three groups had similar mean changes from baseline to 90 minutes for FEV_1 (P=0.12), respiratory rate (P=0.98), oxygen saturation, and scores for accessory muscle (P=0.58), wheezing (P=0.73), and dyspnea (P=0.39). Children in the nebulizer group had a higher mean increase in heart rate than children in the two MDI groups (increase of 12.9 beats per minute vs 3.4 for high-dose MDI and 2.6 for low-dose MID; P=0.005). In children with mild acute asthma, a standard low dose of albuterol by MDI with a spacer was as effective as higher, weight-adjusted doses delivered by MDI with a spacer or low doses delivered by a nebulizer.

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Commentary

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Guidelines from the US National Asthma Education and Prevention Program Expert Panel Report indicate that equivalent bronchodilation can be obtained with an MDI with a spacer as with continuous nebulizer treatment.[1] This study by Schuh and colleagues adds to the increasing evidence that children with mild asthma derive similar clinical benefit from bronchodilators delivered by an MDI with a spacer or by a nebulizer. A recent review of 13 trials in adults and children concluded that MDIs with spacers were at least as effective as nebulizers for beta-agonist administration, and in children, resulted in shorter stays in emergency departments and lower pulse rates.[2]

Blinding the children to which treatment they received and the research nurses who measured the outcomes increase the trustworthiness of the findings. No description of how the assessment scores (wheezing, accessory, and dyspnea) were derived limits the interpretation of these data. However, the main research question is answered by improvements in a standardized measure (FEV_1).

The results are relevant for advanced practice nurses who manage asthma in children and adolescents in emergency departments, urgent care centers, or specialty clinics. Matching treatment strategies in the acute care setting with those used at home can increase family compliance with the treatment plan[3] by allowing nurses to assess family and child techniques, demonstrate proper techniques and answer questions.

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Best Practice

EVIDENCE-BASED CASE REVIEW

Severe neutropenia: a diagnostic approach

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Objectives

- Learn the common causes of neutropenia
- Recognize the severity of the neutropenia and indications for hospital admission
- Understand the diagnostic workup in a patient with neutropenia
- Understand the treatment options that are available for severe neutropenia

Normal levels of neutrophils are essential to prevent infections. Neutropenia is a relatively common disorder most often due to chemotherapy treatments, adverse drug reactions, or autoimmune disorders. The differential diagnosis of neutropenia is broad and encompasses congenital, infectious, rheumatologic, and iatrogenic causes.[1,2] Severe neutropenia or agranulocytosis, defined as an absolute neutrophil count of less than 0.5×10^9/L (<500/μL), is uncommon but can cause morbidity and mortality from infections. Epidemiologic studies show a wide variation in the incidence of neutropenia among geographic regions, with an average annual incidence of 56.4 cases of neutropenia and 9.0 cases of agranulocytosis per million people in the United States.[1] Data from the International Agranulocytosis and Aplastic Anemia Study in Europe show an annual incidence of 6.2 cases of agranulocytosis per million people.[2] Both studies assessed only hospitalized patients with severe neutropenia due primarily to noncytotoxic drugs, infections, or immune disorders and excluded those patients who were treated with cytotoxic drugs. Male and nonwhite patients had an increased risk, and patients between 50 and 59 years of age had the highest risk. No epidemiologic studies adequately address the relative severity, frequency, and mortality of the different causes of neutropenia. In this review, we present the case of a patient with apparently acute severe neutropenia.

Summary points

- Patients with a neutrophil count of less than 0.5×10^9/L (500 cells/μL) and signs or symptoms of infection require immediate hospitalization and prophylactic antibiotic therapy
- Severe neutropenia is most commonly due to cell destruction that is mediated by the immune system or hypoplasia, rather than sequestration
- Drugs are the most common cause of neutropenia, and medicines that can cause neutropenia should be discontinued whenever possible
- The appropriate use of cytokines is dependent on the underlying cause of neutropenia

METHODS

Information on the topics discussed in this review was obtained through a literature search using MEDLINE and the following keywords: neutropenia, agranulocytosis, sarcoidosis, and autoimmune. In addition, popular textbooks of hematology and rheumatology were consulted.

The patient, aged 45, had a five-week history of chest heaviness, palpitations, and flulike symptoms that are increasing in severity. In the past, she has had paroxysmal atrial tachycardia for which she intermittently takes quinidine sulfate, but she is not taking any other medications. On physical examination, she has a fever (temperature, 38.7°C), axillary lymphadenopathy, and an enlarged spleen. Her electrocardiogram shows sinus tachycardia. Her leukocyte count is 0.77×10^9/L (770/μL) with an absolute neutrophil count of 0.38×10^9/L (380/μL), hematocrit of 0.39, and a platelet count of 106×10^9/L (106×10^3/μL). Her serum lactate dehydrogenase level is 600 U/L (reference range, 0-250).

Does this patient require hospitalization, and what studies should be considered on initial evaluation?

The physician should focus first on the severity of the neutropenia and on the presence of symptoms suggesting infection. Any patient with an absolute neutrophil count of less than 0.5×10^9/L and with fever or signs of infection and those with evidence of a malignant disease need immediate hospitalization. The cause of the neutropenia should be rapidly evaluated, relevant tissue and fluid specimens obtained for culture, and a regimen of supportive antibiotic therapy started.

In the diagnostic evaluation, it is important to ask about prior infections and to look at previous complete blood cell counts. Physicians should ask about weight loss, fever, or night sweats; medications; recent viral infections; and rheumatologic complaints. During the physical examination, the physician should look for and record the presence or absence of fever, mucositis, gingivitis or abscess, adenopathy, and hepatosplenomegaly. The findings of a microscopic examination of the patient's peripheral blood smear may suggest megaloblastosis, myelodysplasia, or hematologic cancer.

Patients without infectious symptoms and with only mild neutropenia, which could be due to a medicine or a recent viral infection, may be monitored with blood cell counts several times per week for 6 to 8 weeks. The cause of neutropenia in children is likely to be benign and to resolve without any intervention. Patients at risk for acquiring human immunodeficiency virus (HIV) infection should undergo testing for HIV, and patients with symptoms and findings suggestive of collagen vascular disease should have the appropriate serologic tests carried out. A bone marrow evaluation is considered mandatory in patients whose neutropenia does not resolve after discontinuation of medications and in any patient with multiple cytopenias. The bone marrow aspirate may be sent for cytogenetic analysis and flow cytometry to rule out a malignant disorder or myelodysplasia. The biopsy specimen may also be assessed for infectious causes, such as mycobacteria and fungi, that could explain the neutropenia. Hematologic consultation should be considered for all patients except those with mild neutropenia or with an obvious drug-related cause.

The patient is afebrile and does not appear acutely ill. She has no history of weight loss or night sweats. Mild anemia was noted one year ago, but her other blood cell counts have been normal. Blood and urine specimens are sent to the laboratory for culture. A radiograph of her chest shows bilateral hilar adenopathy and upper zone interstitial markings, which have progressed since a previous chest radiograph in January 1997, 13 months prior to admission. The results of her liver function tests, serum vitamin B_{12}, and folate concentrations are normal. Computed tomographic scans show hilar, retroperitoneal, axillary, and inguinal adenopathy and confirm mild splenomegaly. A bone marrow aspirate shows a mildly left-shifted myeloid lineage but there is no evidence of a clonal proliferation by flow cytometry, ruling out a hematopoietic malignancy. Examination of a bone marrow biopsy specimen shows that the marrow has been replaced with noncaseating granulomas (figure 1). Mycobacterial and fungal staining do not show any organisms.

What is the most likely underlying cause of the patient's neutropenia, and what other testing might be considered?

The mechanisms underlying the development of neutropenia mirror those for all of the formed blood elements—namely, defective production, accelerated destruction, or sequestration outside the circulating blood pool (table). A useful initial distinction can be made between congenital or hereditary and acquired causes of neutropenia. The congenital syndromes are rare, present in childhood, and associated with a history of recurrent infections and anomalous neutrophil structure.

Neutropenia is more likely to be acquired than congenital. The most common cause of acutely acquired neutropenia is cytotoxic chemotherapy or radiation therapy for malignant diseases; it affects up to 40% of patients given treatment. Drug reactions are the most common cause of isolated neutropenia, although the precise incidence is not known because reliable information on the use of drugs is not readily available. The neutropenia may be mediated either by direct marrow suppression, as seen

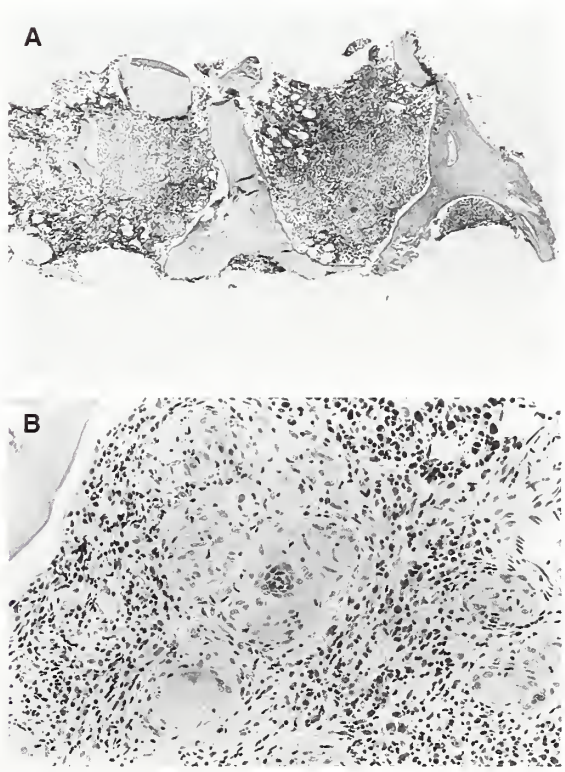

Figure 1. (Top) Low- and (bottom) high-power fields of a bone marrow biopsy specimen showing noncaseating granulomas.

Table 1. *Classification of neutropenias*

Neutropenia type	Example
Acquired	
Production	Cytotoxic chemotherapy, irradiation Drugs—chloramphenicol, phenothiazines Metabolic disease Nutritional deficiency—vitamin B_{12}, folate Infectious Viral—EBV, CMV, hepatitis, HIV, influenza Bacterial—salmonella, brucella, pertussis, rickettsia Mycobacteria Fungal Malignant—leukemia, lymphoma myelodysplasia
Destruction	Collagen vascular disease—systemic lupus erythematosus, rheumatoid arthritis, Sjögren's syndrome Drugs—penicillins, cephalosporins, quinidine sulfate Infections Malignant diseases—large granular lymphocyte leukemia
Sequestration	Hypersplenism
Congenital	
Kostmann syndrome	
Cyclic neutropenia	

EBV = Epstein-Barr virus, CMV = cytomegalovirus, HIV = human immunodeficiency virus

with the use of chloramphenicol and phenothiazines, or by immune destruction of the neutrophil or myeloid precursors, as seen with the use of penicillins, cephalosporins, and quinidine.[3] Neutropenia that is drug induced and immunologically mediated is likely to be underdiagnosed, because testing for the antineutrophil antibodies is not widely available, and the detection of drug-dependent antibodies is seldom attempted.[4,5] Because immune agranulocytosis has a 20% mortality, it must be considered an extremely serious condition.[6-8] There is an inverse correlation between the level of marrow hypoplasia and the time it takes for marrow to recover. Patients who have renal insufficiency or bacteremia at the time of presentation have a significantly higher mortality.[8,9]

Viral infections are a common cause of neutropenia, due either to bone marrow suppression or to peripheral destruction. The agents commonly implicated include Epstein-Barr virus, cytomegalovirus, hepatitis A and B viruses, parvovirus, *Influenzavirus* species, and measles.[10,11] Infection with HIV is also associated with neutropenia and approximately 70% of patients infected with HIV are neutropenic during their illness.[12] The HIV virus not only may suppress hematopoiesis but also increases the risk of acquiring other infections. Furthermore, therapy with antiretroviral agents may dramatically decrease neutrophil counts.

Any bacterial infection can cause neutropenia, but it is most commonly seen in salmonellosis, brucellosis, pertussis, and rickettsial infections.[12] Disseminated tuberculosis is also known to cause neutropenia. It is, however, unusual in fungal infections unless the bone marrow is extensively involved, as occasionally seen with disseminated histoplasmosis.[13]

Neutropenia may be a prominent feature of collagen vascular diseases. About 50% of patients with systemic lupus erythematosus have white blood cell counts of less than 4.5×10^9/L (<4,500/μL), but severe neutropenia is unusual and should prompt a search for other causes.[14,15] Splenomegaly and neutropenia (Felty's syndrome) may develop in patients with rheumatoid arthritis.[16,17] These patients may have an absolute neutrophil count of less than 0.1×10^9/L and recurrent major and minor infections. Other collagen vascular diseases such as Sjögren's syndrome, polymyalgia rheumatica, and mixed connective tissue disease have been known to cause autoimmune neutropenia.[18,19] The specific mechanism of the neutropenia associated with collagen vascular diseases is not known; however, circulating immune complexes and antineutrophil antibodies directed against specific neutrophil antigens have been identified in these patients.[20]

Both benign and malignant hematopoietic diseases may cause neutropenia. For example, vitamin B_{12} and folate deficiencies cause not only neutropenia but also anemia and thrombocytopenia.[21,22] Megaloblastic features are essentially always present in the circulating cells and in the marrow precursors. Leukemia, multiple myeloma, and myelodysplasia may all cause neutropenia by suppressing normal myelopoiesis.[23,24] Because the patient had combined cytopenias, a marrow aspiration was carried out to rule out malignancy and to evaluate the likelihood of an infectious cause. The finding of hilar adenopathy, hepatosplenomegaly, and a pattern of apical pulmonary infiltrates suggested the diagnosis of sarcoid. These findings are not specific, however, and may be associated with fungal and mycobacterial infections, toxoplasmosis, viral disease, systemic lupus erythematosus, and Wegener's granulomatosis. The diagnosis of sarcoidosis is one of exclusion—ruling out infectious and immune causes for the clinical findings and for the tissue granulomas.[25] In this patient, the severity of the neutropenia was unusual for sequestration, and it was necessary to look for other causes.

The patient is afebrile during her admission, and her initial cultures are negative for pathogens. Her neutropenia resolves two days after the quinidine is discontinued, and she is discharged to home. Her bone marrow cultures subsequently show no growth of organisms. Brucellosis, Q fever, and other rickettsial diseases are ruled out with acute and convalescent titers. Tests are negative for HIV, cytomegalovirus, and hepatitis A, B, and C. Results of an Epstein-Barr virus serologic test are consistent with previous exposure. Serologic tests are negative for

antinuclear and antineutrophil cytoplasmic antibodies. Of note, her rheumatoid factor is 47 IU/mL (reference range, 0-11) and an angiotensin-converting enzyme level is 99 U/L (reference range, 8-52). Antibody test results suggest that the patient has antineutrophil antibodies that are dependent on quinidine (figure 2).

What other interventions might be considered as treatment of neutropenia?

Neutropenia that is drug-induced often resolves within days to weeks after the medicine is discontinued. Watchful waiting is the first option for patients whose neutropenia is thought to be due to a viral infection or medication. Neutropenia resulting from chemotherapy or radiation may, in specific instances, be treated with cytokines such as granulocyte colony–stimulating factor or granulocyte-macrophage colony–stimulating factor. The use of cytokines after patients have already become neutropenic from treatment has not been shown to substantially decrease the mortality from infections, the duration of fever, or the duration of antibiotic therapy. The American Society of Clinical Oncology recommends the prophylactic use of cytokines for patients at high risk for neutropenia developing from cytotoxic drugs in intensive doses.[26,27] Once neutropenia is established as a result of chemotherapy, current recommendations are to consider cytokine therapy if there is evidence of fungal infection, pneumonia, hypotension, or sepsis syndrome. Granulocyte-macrophage colony–stimulating factor ameliorates the neutropenia in severe infantile agranulocytosis (Kostmann syndrome), cyclic neutropenia, and idiopathic neutropenias.[28-30] The decision to initiate therapy should be made only in consultation and principally in patients who are at an increased risk for infections. Other more aggressive interventions such as allogeneic marrow transplantation have been effective in patients with diseases of the bone marrow such as Kostmann syndrome, aplastic anemia, and myelodysplastic syndromes and in several malignant hematopoietic diseases.[31]

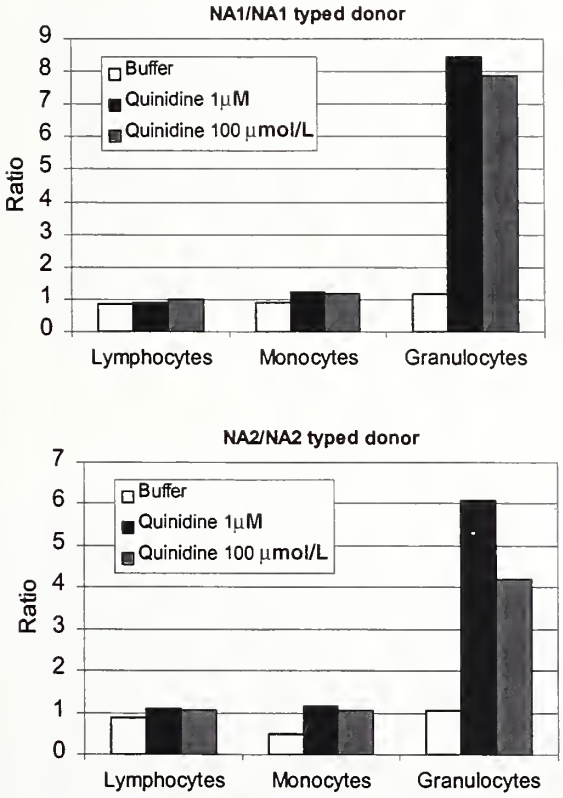

Figure 2 The patient's serum was incubated with NA1/NA1– (top) or NA2/NA2 (bottom)–typed donor cells in buffer or quinidine solutions. NA1 and NA2 are granulocyte-specific antigens that differ in their amino acid sequence. Antibodies may be specific to one or the other antigen. Leukocyte-bound antibodies were detected with antihuman antibody labeled with fluoresceine. The ratios of the mean peak channel of the patient's serum are shown compared with that of the control serum for lymphocytes, monocytes, and granulocytes.

At follow-up two months later, the patient is found to have a normal white blood cell count with persistent mild anemia and thrombocytopenia. She is asymptomatic except for painful pretibial erythema nodosum. In the absence of serious pulmonary problems, she is not being treated for sarcoidosis.

This patient had signs and symptoms of multiple disease processes. The extremely low neutrophil count is not typical of sequestration from splenomegaly, which in this case was related to sarcoidosis. The presence of antineutrophil antibodies that were dependent on quinidine suggests that the neutropenia was most likely due to the destruction of white blood cells by the immune system. However, autoimmune disorders related to quinidine are not known to cause splenomegaly or bone marrow granulomas.[32] Sarcoidosis, which was considered only after excluding infectious and rheumatologic causes, would explain these findings in this patient. Leukopenia is also seen with sarcoidosis, especially in those who have splenomegaly, but is usually due to decreased lymphocyte counts and not to neutropenia.[33] Thus, our patient had both sarcoidosis and neutropenia induced by quinidine. Patients with sarcoidosis have a humoral immune system that is dysregulated and also have circulating autoantibodies, suggesting that they may be at increased risk for neutropenia that is drug-dependent[34]

We thank Barbara Roberts for performing the antineutrophil antibody assays.

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100 years ago

"As the nineteenth century draws to a close surgery spreads its domain over all viscera. Organs such as the liver, the lungs, the brain, whose affections were before amenable only to the resources of medical therapeutics, have received in the last few years the benefit of surgical intervention."

L Bazet, San Francisco

"The microscope is a jealous mistress. In order that one may do original work, she requires his undivided attention. I have not been able to give her that consideration."

CW Murphy, Los Angeles

Transactions of the Medical Society of the State of California
Twenty-Eighth Annual Session, 1898

TOOLBOX

Medical management of menorrhagia

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Competing interests: None declared

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Excessive menstrual loss, or menorrhagia, is a significant health care problem in the developed world. In the United Kingdom, 5% of women of reproductive age seek help for this symptom annually[1]; by the end of reproductive life, the risk of hysterectomy (primarily for menstrual disorders) is 20%.[2] This is also the situation in New Zealand.[3] Objectively, menorrhagia is defined as a menstrual blood loss of 80 mL per month. Population studies have shown that this amount of blood loss occurs in 10% of the population[4]; yet nearly a third of all women consider their menstruation to be excessive.[5] This symptom thus creates a substantial workload for health services.

In clinical medicine, the paradigm of evidence-based medicine currently holds sway. Evidence-based medicine implies not only the application of effective treatments but also their rational use within a rational overall management framework. In the management of excessive menstrual loss, many physicians do not necessarily prescribe the most effective treatments. In the United Kingdom, for example, more than a third of general practitioners prescribe norethisterone [norethindrone]—arguably the least effective option—as first-line treatment, whereas only 1 in 20 prescribe tranexamic acid, probably the most effective first-line treatment.[6] The problem is not confined to primary care. In New Zealand, where the use of tranexamic acid is restricted to secondary care, 50% of gynecologists still use luteal-phase progestogens, and less than 10% use tranexamic acid.[7]

In this review, I provide a rational overview of the diagnostic and therapeutic management of menorrhagia, relying on the systematic reviews presented in three articles—two guidelines for the management of excessive menstrual loss published in 1998[8,9] and a consensus view published in 1995[10]—and the Cochrane Library for the source literature.

Summary points

- Menorrhagia is an important healthcare issue
- Despite widely available evidence inappropriate treatments are being prescribed
- Guidelines exist for the appropriate management of menorrhagia
- Appropriate treatments enhance patient choice and may increase patient satisfaction
- Medical treatments may be an effective alternative to surgery

CAUSE AND DISORDER OF MENORRHAGIA

Menorrhagia can be associated with both ovulatory and anovulatory ovarian cycles. It is important to distinguish the menstrual consequences of each cycle. Ovulatory ovarian cycles give rise to regular menstrual cycles whereas anovulatory cycles result in irregular menstruation or, extremely, amenorrhea. This distinction is critical in management. Both ovulatory and anovulatory cycles can give rise to excessive menstrual loss in the absence of any other abnormality—so-called dysfunctional uterine bleeding. Other disorders may be associated with excessive loss, for example, fibroids and adenomyosis, but the association may not always be causal. Endocrine disorders do not cause excessive menstrual loss, with the exception of the endocrine consequences of anovulation. Equally, except in selected populations, hemostatic disorders are rare causes of menorrhagia, despite suggestions to the contrary.[11]

Excessive menstrual loss in regular menstrual cycles is the most common clinical presentation. Patients with this complaint ovulate regularly. Laboratory-based research has shown that several abnormalities can occur in the endometrium of these women—for example, increased fibrinolytic activity[12] and increased production of prostaglandins.[13] These observations provide the rational basis for treatment.

One consequence of excessive menstrual blood loss is iron deficiency anemia. In the western world, menorrhagia is the commonest cause of iron deficiency anemia, and low hemoglobin concentrations may predict objectively heavy menstrual blood loss.[14]

INVESTIGATIONS

Numerous investigations are undertaken for menorrhagia. The purpose of investigation is threefold: to assess the morbidity associated with excessive menstrual loss, to exclude major intrauterine disease, and to assess the importance or otherwise of coexistent disorders. The utility of commonly performed investigations is detailed on p 254.

CHOOSING AN APPROPRIATE TREATMENT

In most patients, no specific abnormality will have been identified from the history, examination, and investigation, a hallmark of dysfunctional uterine bleeding. The choice of treatment must, therefore, be considered in relation to several factors (see box). An element of choice for the patient is important. It has been suggested that involving patients in

Factors influencing treatment choices

- Presence of ovulatory or anovulatory cycles
- Need for contraception
- Patient preference (particularly desire to avoid hormonal therapy)
- Contraindications to treatment

Utility of commonly performed investigations for menorrhagia

Full blood count

- Hemoglobin concentration is a surrogate assessment for excessive menstrual loss.[14] Other indices within the full blood count may more accurately assess iron state.[9] Full blood count should be undertaken in all women presenting with menorrhagia

Coagulation screen

- Tests for coagulopathies such as von Willebrand's disease should only be undertaken when specifically indicated by the history

Thyroid function tests

- There is little evidence to link hypothyroidism with excessive menstrual loss[15] and no evidence for hyperthyroidism to be a cause.[16] Thyroid function tests should not be routinely undertaken

Other endocrine investigations

- No significant endocrine abnormality has been detected in menorrhagia.[17,18] There is no indication for any endocrine investigation

Pelvic ultrasound

- Routine pelvic ultrasound has little place in evaluating the primary complaint of excessive menstrual loss.[8] It is of value in evaluating other pelvic disorders discovered during clinical examination

Endometrial sampling

- As part of initial assessment there is no place for endometrial sampling.[9] Sampling should be combined with further assessment of the endometrial cavity, for example, hysteroscopy, in selected cases only. Selected cases would include women over 40, women complaining of intermenstrual bleeding, and after a failed trial of medical treatment

the decision-making process may increase the effectiveness of treatment.[19] Patients need to be properly informed, however, to be empowered to make appropriate choices.

Medical treatment can be conveniently divided into nonhormonal and hormonal therapy. Because there is no hormonal defect,[17,18] the use of hormonal therapy does not correct an underlying disorder but merely imposes an external control of the cycle. For many women, cycle control is as important as the degree of menorrhagia.

The two main first-line treatments for menorrhagia associated with ovulatory cycles are nonhormonal: the antifibrinolytic tranexamic acid and nonsteroidal anti-inflammatory drugs (see box). The effectiveness of these treatments has been shown in randomized trials[20-22] and reported in systematic reviews of treatment.[8,9,23,24]

Tranexamic acid reduces menstrual blood loss by about half, and nonsteroidal anti-inflammatory drugs reduce it by about a third. Both have the advantage of being taken only during menstruation itself—an aid to compliance—and are particularly useful in women who either do not require contraception or do not wish to use hormonal therapy. They are also of value in treating excessive menstrual blood loss associated with the use of nonhormonal intrauterine contraceptive devices.

Traditionally, hormonal therapy for menorrhagia has been progestogens given during the luteal phase of the cycle. Such treatments are ineffective.[25] Despite this, they remain the first choice of many general practitioners and gynecologists.[6,7] Progestogens are effective when given for 21 days in each cycle,[25,26] but the side effects may be such that patients choose not to continue with treatment.[26] Although progestogens have a contraceptive effect, their use in this way may not be the best choice when contraception is required by the patient.

The combined contraceptive pill is both an effective contraceptive and treatment of menorrhagia compared with other medical treatment.[27] This statement, however, cannot be expanded upon because good-quality data are lacking,[27] and the use of the contraceptive pill in this area has been insufficiently studied. Nevertheless, like cyclical progestogens, combined oral contraceptives are useful for anovulatory bleeding because they impose a cycle.

More fully evaluated is the recently licensed levonorgestrel-releasing intrauterine system. This system consists of a T-shaped intrauterine device sheathed with a reservoir of levonorgestrel that is released at the rate of 20 μg daily. This low level of hormone minimizes the systemic progestogenic effects, and patients are more likely to continue with this therapy than with cyclical progestogen therapy.[26] The levonorgestrel-releasing intrauterine system is not yet licensed for use in the treatment of menorrhagia, but when contraception is also required, its use is legitimate. It exerts its clinical effect by preventing endometrial proliferation and consequently reduces both the duration of bleeding and the amount of menstrual blood loss.[27] For up to 6 months, patients may have irregular bleeding or spotting, especially in the first 3 months, but after 12 months of therapy, most women have only light bleeding, and a major proportion have amenorrhea.[9] Many of the potential problems of bleeding and spotting can be overcome by thorough pretreatment counseling.

Effective treatments for menorrhagia

- Tranexamic acid
- Non-steroidal anti-inflammatory drugs
- Combined oral contraceptives
- Cyclical (21 days) progestogens
- The levonorgestrel releasing intrauterine system

The levonorgestrel-releasing intrauterine system is advocated as an alternative to surgery. Two studies have examined the effect of offering this treatment to women on waiting lists for hysterectomy.[28,29] In the first of these studies, 50 women on a waiting list were offered this treatment, and 41 of them (82%) were removed from the waiting list as a result.[28] In the second study, 56 women on surgical waiting lists were randomly assigned to continue with their current regimen or to use a levonorgestrel-releasing intrauterine system; 18 women (64%) using the system cancelled their surgery compared with 4 women (14%) not using the system.[27] When compared with minimally invasive techniques, it seems to be equally effective.[30] Whether this treatment will provide a long-term alternative to surgery remains to be evaluated.

Excessive menstrual blood loss is a major health care problem. The publication of guidelines[8,9] acknowledges that inappropriate management is being applied. Effective medical treatments exist and have a rational basis for their use. Increased use of effective treatments will improve patient choice and provide an alternative to surgery.

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Keeping it brief

"Sec. 1. Be it enacted by the General Assembly of the State of Ohio, That within thirty days after the passage of this act it shall be the duty of the probate judge in each county in this state to appoint three persons, who shall be reputable, practicing physicians, residents of such county, and no two of whom shall belong to the same school of medicine, whose duty it shall be to consider and pass upon all applications for license to marry, now made to the probate court, and no license to marry shall be granted to persons contemplating marriage unless they shall have received from the persons, so appointed, a certificate setting forth that such applicants are free from the following ailments, any of which shall be deemed sufficient cause for refusing a license: Dipsomania, true insanity, hereditary insanity, or insanity resulting from vice, primary, secondary or tertiary syphilis, hereditary tuberculosis or consumption."

One sentence—from *Some recent legislation–a bill to regulate the granting of marriage licenses.* In: *Transactions of the Medical Society of the State of California,* 1898.

TOPIC IN REVIEW

How molecular epidemiology has changed what we know about tuberculosis

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By the mid-1980s, the US public health community considered tuberculosis to be under control, and a plan was established for its elimination by 2010. Between 1989 and 1992, however, the number of cases increased, and in response, scientists and public health officials reinvigorated research and control programs. These efforts have now turned the tide, and the number of cases of tuberculosis in the United States is again decreasing, being down 31% from the peak of the resurgence.[1]

During this time, researchers and disease controllers came together in a relatively new field, molecular epidemiology. This endeavor combines molecular methods for identifying individual strains of bacteria with conventional epidemiologic methods to investigate the determinants and distribution of disease. Together they can establish transmission links, identify risk factors for transmission, and provide insight into the pathogenesis of tuberculosis. Bacterial DNA fingerprinting is performed using restriction fragment-length polymorphism analysis that yields a unique pattern for unrelated clinical organisms and an identical pattern for strains isolated in outbreak settings. It can, however, be used only to track transmission between persons with active disease because the technique requires a viable culture of *Mycobacterium tuberculosis*.[2]

In this review, we present a summary of what has been learned about transmission dynamics and the pathogenesis of *M tuberculosis* since the first description of DNA fingerprinting in 1989 and the implication of these lessons for tuberculosis control.

Summary points

- A variety of social and biologic factors foster the accelerated progression and transmission of tuberculosis
- Many populations have recently had high rates of tuberculosis transmission
- Transmission may disproportionately occur among identifiable subgroups and in specific locations
- Patients with smears that are negative for acid-fast bacilli transmit infection to others, although they are less infectious than patients with smears positive for the bacilli
- Continued vigilance is needed to prevent and identify false-positive cultures due to laboratory cross-contamination
- People may become exogenously reinfected with *Mycobacterium tuberculosis*, and this can be clinically indistinguishable from relapsed disease
- Aggressive implementation of currently available control measures can decrease transmission

TUBERCULOSIS CAN PROGRESS RAPIDLY FROM INFECTION TO DISEASE

The natural history of tuberculosis starts with the exposure to *M tuberculosis*. Although the human immune response generally controls this infection, it cannot eradicate the pathogen, resulting in an asymptomatic infection. At this point, a person is noninfectious, and the only evidence of infection is reactivity to a tuberculin skin test. It has been widely stated that active tuberculosis will develop in only 10% of these latently infected people during their lifetimes. The ability of bacterial DNA fingerprinting to precisely track *M tuberculosis* shows that in certain circumstances, this sequence of events is "telescoped," with the interval from infection to disease being as short as a few weeks.

In general, if people have been infected from each other or a common source, their strains will have the same "fingerprint." Conversely, if the persons have reactivated latent infection, their fingerprints will differ. Using this approach, it has been shown that persons infected with the human immunodeficiency virus (HIV),[3] homeless persons,[4] and other immunosuppressed patients[5] developed active tuberculosis within 4 weeks to 6 months of being exposed to *M tuberculosis*. These data confirm that host factors like immunosuppression can change the natural history of disease and emphasize the need to rapidly identify these people so that infection may be diagnosed and treated. Also, the comparison of DNA fingerprinting of *M tuberculosis* in outbreaks has become a routine tool for

Glossary

Molecular epidemiology of tuberculosis A field that combines molecular techniques and conventional epidemiologic methods to study the dynamics of tuberculosis transmission

Tuberculosis DNA fingerprinting The use of molecular biologic techniques to identify specific strains of bacteria

Restriction fragment-length polymorphism analysis A technique used to fingerprint *Mycobacterium tuberculosis*

investigating cases in which tuberculosis transmission is suspected.

A DISTURBING PERCENTAGE OF ADULT CASES OF TUBERCULOSIS ARE RECENTLY ACQUIRED

Before the resurgence of tuberculosis, it was thought that tuberculosis develops in most adults by the reactivation of infection acquired in the remote past. By extrapolating the ability of DNA fingerprinting to identify recently transmitted disease in outbreaks, it has been possible to estimate the relative contribution of reactivated and recently transmitted disease. These estimates are made by comparing the DNA fingerprint of all tuberculosis organisms in a population and identifying groups of people infected with the same strain. The assumption is that among a group of patients infected with the same strain (termed "clusters"), one represents a reactivated case, and the remainder will be due to recent infection. One person from each cluster and all persons found to have disease by unique strains are assumed to have reactivated disease.

In contrast to the established dogma, molecular epidemiologic studies have shown that about 38% of the tuberculosis cases in New York City from 1989 to 1992[6] and 31% of cases in San Francisco, California during 1991 and 1992[7] were due to recent infection. Subsequently, similar studies have found this number to vary considerably in different epidemiologic circumstances.[8,9]

These findings have important implications for tuberculosis control. If recent infection with rapid evolution to active tuberculosis is more common, efforts should focus on identifying and treating the source patients and investigating all the contacts. Conversely, in communities where transmission is rare and most disease is a consequence of reactivated latent infection, control measures must be directed to identify and treat people who are latently infected, a situation that is increasingly common in the United States.

RISK FACTORS FOR TUBERCULOSIS TRANSMISSION ARE IDENTIFIABLE

In addition to quantifying the amount of recent transmission, molecular epidemiologic studies can identify the risk factors for these events and suggest methods for interrupting transmission.

Tuberculosis has been associated with alcohol abuse, but a study of an outbreak showed that visiting a bar and not the alcohol use was the risk factor for *M tuberculosis* transmission in this setting.[10] By comparing people who are in clusters with those infected with unique strains, it is possible to define risk factors for tuberculosis transmission in a population. In San Francisco, tuberculosis patients younger than 60 years, of African American or Hispanic ethnicity, and those who were HIV-seropositive were more likely to have been recently infected with *M tuberculosis*.[7]

It was traditionally thought that prolonged contact was needed for tuberculosis transmission between an infectious patient and a susceptible host. Accordingly, contact investigation focused on household, school, and workplace contacts. Molecular epidemiologic studies, however, have shown unsuspected sites of transmission. For example, in Seattle, Washington, an abrupt increase of tuberculosis was detected among people infected with HIV. The initial contact investigation did not reveal any epidemiologic link, but the DNA fingerprints of a third of patients were similar.[10] The new investigations showed that these patients had a common exposure in a bar.

Hospitals are also important sites of tuberculosis transmission. Several outbreaks have been documented to be mainly caused by a delay of tuberculosis diagnosis in the source patient and susceptible persons, such as those infected with HIV.[11]

Control efforts must be specifically enhanced in those social scenes and locations where most transmission is occurring. In the general population, passive case finding of tuberculosis (detection among persons seeking medical attention because of chronic cough) is recommended. In some settings, however, more active searches for symptomatic persons may be needed to control the disease. In hospitals, strict respiratory isolation policies are essential, particularly where patients or staff may be infected with HIV. Conventional contact investigations identify only a small percentage of transmission, stressing the need for novel approaches.[12] What combination of these activities will be most cost-effective for interrupting transmission remains to be determined.

PATIENTS WITH SMEARS NEGATIVE FOR ACID-FAST BACILLI ARE INFECTIOUS

Given the limited budgets of tuberculosis control programs, prioritizing control activities is a challenge. One approach involves the microscopic examination of sputum specimens to detect acid-fast bacilli (AFB). Patients whose sputum specimens have microscopically demonstrable AFB are highly infectious, and control measures such as isolation are essential. Recently, transmission from patients with AFB-negative smears was examined in a population-based study. It was concluded that although patients with AFB-positive smears were three to four times more infectious than patients whose smears were AFB-negative, 17% of cases of tuberculosis transmission originated from people with AFB-negative smears.[13] A study in rural Mexico showed that primary drug-resistant tuberculosis (resistant organisms in patients without a history of antituberculosis treatment) was more frequent in patients whose smears were AFB-negative than those whose smears were AFB-positive.[14] Taken together, these studies suggest

that smear-negative patients transmit a considerable amount of infection and may even disproportionately propagate drug-resistant *M tuberculosis*.

These findings may have grave implications for tuberculosis control programs in developing countries, where diagnosis is based on AFB smears. It is important to expand the use of existing technologies to identify patients with tuberculosis who have AFB-negative smears.

PATIENTS WHOSE TUBERCULOSIS WAS CURED MAY HAVE SUBSEQUENT EPISODES

Whether tuberculosis confers protective immunity or patients may become reinfected with *M tuberculosis* has long been debated. To address this issue, the DNA fingerprints of strains isolated during the first and subsequent episodes have been compared.

The first use of this approach was on HIV-infected patients in a New York City hospital whose cultures were repeatedly positive for *M tuberculosis*. In some patients, the DNA fingerprint of the subsequent organisms remained unchanged despite the development of drug resistance. In other patients, the DNA fingerprint changed dramatically, demonstrating exogenous reinfection with a novel *M tuberculosis* strain.[15] Another study addressed the relative frequency with which reinfection and relapse occur in a population. By fingerprinting the bacteria from 698 people with tuberculosis diagnosed during 6 years in a community in South Africa, the authors identified 16 people (none of them coinfected with HIV) who had a new episode of tuberculosis following curative therapy. When the DNA fingerprints of the initial and subsequent strains were compared, 12 patients were found to have been exogenously reinfected.[16] These data show that patients are not completely protected from a subsequent episode of tuberculosis and that exogenous reinfection may account for much of the disease in some regions. This observation reinforces the need for strong control programs to interrupt transmission, even in settings where high percentages of people are already infected.

RESTRICTION FRAGMENT-LENGTH POLYMORPHISM ANALYSIS CAN HELP IDENTIFY FALSELY POSITIVE CULTURES

An unanticipated finding of the molecular epidemiologic studies has been that an appreciable number of cultures are falsely positive. In investigations of people with the same strains of *M tuberculosis*, evidence of disease was unconvincing; rather, they seemed to have cultures that were positive because of contamination in the laboratory.[17] This can occur through mislabeling and contamination of reagents and the transfer of *M tuberculosis* between specimens. Suspected cross-contamination begins either with the clinician (when there are inconsistencies between clinical and microbiologic results) or in the laboratory (when there is an inappropriately large number or pattern of positive cultures). Population-based studies suggest a prevalence as high as 3%.[18] The consequences of laboratory cross-contamination are serious. Patients and contacts are subjected to additional physician consultations and tests, unnecessary treatment, and delays in the diagnosis of other diseases. Because bacterial DNA fingerprinting is an indispensable tool for confirming suspected cross-contamination, the Centers for Disease Control and Prevention have made this test available by contacting local tuberculosis control personnel.

EFFICIENT TUBERCULOSIS CONTROL PROGRAMS DECREASE TRANSMISSION

The cohort evaluation of patients with tuberculosis and the trends in the incidence and mortality have been the main measurements to evaluate the control programs.[19] Currently, a molecular epidemiologic approach is also being explored. In San Francisco, the tuberculosis control program intensified its activities in 1991 by improving contact investigation, expanding the use of direct observed or short-course therapy, developing an HIV-related tuberculosis prevention program, screening for tuberculosis and the use of preventive therapy among high-risk groups, and improving hospital infection control measures. Conventional epidemiologic data showed a decrease in the incidence from 51.2 cases per 100,000 people in 1992 to 29.8 cases per 100,000 in 1997; molecular surveillance showed a decrease in the rate of disease attributed to recent transmission from 10.4 cases per 100,000 in 1992 to 3.8 cases per 100,000 in 1997 ($P < 0.001$).[20] This result suggests that control measures have been particularly successful in interrupting disease transmission. Many people still have reactivation of their latent infections, however, illustrating the need to expand efforts to diagnose and treat latent infection.

CONCLUSION

Molecular epidemiologic approaches have provided novel insights into the transmission and pathogenesis of tuberculosis. But no one is safe from tuberculosis until we are all safe, and thus, the goal of eliminating tuberculosis in the United States remains essential for the long-term control of the disease.

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Practice point

Looking for the man who fell off the roof

Dr Mumps, a primary care physician, has a patient who fell off a roof and was taken to the University of Excellence Hospital, the one that advertises every morning on the radio. In a capricious mood, Mumps decides to find out how his patient is doing. He is greeted by a friendly recording: "If you speak Spanish, press one. If you speak Swahili, press two. To speak to the laundry, press three; for the kitchen, press four; for billing, press five. If you have exhausted all 12 possibilities, stay on the line. Your call is very important to us, and we will answer you promptly."

Half an hour later, Mumps at last speaks to a human voice. It directs him to Dr Buggs, the attending physician, an infectious disease specialist. Buggs answers promptly, but says that she has been "off service" for a week and is back in the laboratory. She suggests calling Dr Chan, offers to transfer the call, but inadvertently disconnects the phone.

Undaunted, Mumps tries again. Not once, but many times. Each time, he must endure the same recording: "If you speak Turkish, press seven . . . " He looks for Dr Chan, but there are 25 Chans working at the University of Excellence. On the third attempt, he finds the right one, but he has signed off the day to Dr Patel, who says that the patient belongs to Dr Mbawa, who believes that the patient belongs to Dr Rigamortis, who is doing a venepuncture and cannot come to the phone. Mumps asks for the patient's room: there is no reply. Perhaps she has gone for an x-ray examination.

The next day, Dr Rigamortis does not answer. The nurse is "on his break." The medical student seems to be in charge, but does not know the patient and suggests calling medical education. Alas, the program director is in a meeting that will last all day. The secretary is "away from her desk" but calls back later. Dr Rigamortis has gone for a job interview. His patients are being seen by Dr Mbawa, she adds mournfully, but the good doctor fell off the roof last night and is in intensive care. "You could call the new attending physician, Dr Smith," she muses, "but he has gone off to a meeting in Patagonia, and Dr Buggs is covering for him."

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MEDICINE CABINET

How to treat influenza and colds

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INFLUENZA

The impact of influenza is often underestimated. In the United States, about 110,000 people are hospitalized and between 20,000 and 40,000 deaths are attributed to influenza each year.[1] Elderly people and those with medical conditions, such as cardiopulmonary diseases or compromised immunity, are especially vulnerable to influenza and its complications; more than 90% of the deaths related to influenza occur in people aged 65 or older. In addition, it has become apparent that the direct and indirect consequences of influenza on younger people are also substantial.[1,2]

Despite the availability of effective vaccines and antiviral agents, serious influenza infections continue to be a global threat because influenza viruses have the ability to change their antigenicity. Minor changes in surface glycoproteins often occur as a result of point mutations (known as antigenic drift); major changes in the genes encoding for these glycoproteins occur less frequently but may introduce pandemic strains (known as antigenic shift).[3] Newly approved antiviral drugs and immunization strategies in development will hopefully provide broader methods of protection in the future.

Influenza vaccine

The influenza vaccine is the most effective strategy in preventing influenza and ameliorating its severity. However, despite the illness and mortality associated with influenza infections, the vaccine remains underutilized.[4] About 60% of people aged 65 or older and less than 30% of people younger than 65 who are at high risk of developing complications from influenza are actually vaccinated.[1,4]

The effectiveness of the vaccine depends primarily on the antigenic match between the strains in the epidemic and the strains contained in the vaccine and on the age and immune status of those who are vaccinated. Each year the vaccine is formulated to contain the two type A strains and one type B strain that have been predicted to be the most likely to circulate in the current season. When the match is close, influenza will be prevented in about 70% to 90% of healthy adults.[1] Elderly people and certain immunocompromised people may develop lower antibody titers after vaccination and this may reduce the efficacy of the vaccine. Although the vaccine may not prevent development of infections in these patients, annual vaccination has been shown to effectively protect against the more serious complications of influenza including hospitalization and death.[5,6] Annual vaccination has also been shown to reduce the incidence of acute otitis media in children and to offer substantial benefits to healthy, working adults, including reduction in upper respiratory illnesses, work absenteeism, and physicians' visits.[7,8] Vaccination of health care professionals is also effective in preventing influenza infections and may, more importantly, reduce transmission to vulnerable, high-risk patients.[9] Recommendations for the use of the influenza vaccine are outlined in table 1.

Summary points

- About 110,000 people are hospitalized with influenza each year
- The influenza vaccine is the most effective strategy for preventing influenza and ameliorating its severity
- Amantadine and rimantadine can be used for prophylaxis and treatment of influenza A
- Zanamivir and oseltamivir can be used to treat both influenza A and B
- The best treatments for colds remain resting and drinking fluids

Future developments

A trivalent, live, attenuated intranasal vaccine is being evaluated and may soon be approved for use in the United States. Besides the ease of administration, an intranasally administered live vaccine may offer the advantage of eliciting specific mucosal immune responses. Induction of local immunity is thought to provide broader protection against influenza than that afforded by the inactivated vaccine.[10] In a clinical trial, the intranasal vaccine was found to be 93% effective in preventing culture-positive influenza when administered in healthy children aged 15 to 71 months; a 30% reduction in febrile otitis media was also observed in the vaccinated children.[11] The results of a trial evaluating this intranasal vaccine in healthy, working adults were recently published.[12] Although illness with fever occurred at the same rate in both the treatment and placebo groups, vaccination significantly reduced the incidence of severe febrile illness and febrile upper respiratory tract infection. Among those who were vaccinated

Table 1 *Guidelines for administering the influenza vaccine (adapted from recommendations of the Centers for Disease Control and Prevention[1])*

Target groups	Timing and administration	Contraindications
People aged ≥65 years	Vaccine may be given any time during flu season	Previous anaphylactic reaction to vaccine, its components, or to eggs
Residents of nursing homes and chronic care facilities with chronic medical conditions	Optimal time for vaccination is from October through mid-November	Acute febrile illness
Adults and children who have chronic pulmonary or cardiovascular disorders	May be given concurrently with the pneumococcal vaccine and with other routine childhood vaccinations	Previous vaccine-related Guillain-Barre syndrome (vaccine may be justified in high risk patients)
Adults and children with other chronic medical problems such as diabetes, renal dysfunction, or immunosuppression	Only split-virus vaccines (known as "split", subvirion", or "purified-surface antigen" vaccines) should be administered to children (<12 years) due to their decreased potential for febrile reactions*	
Children and teenagers receiving long-term treatment with aspirin should receive the influenza vaccine to reduce the risk of Reye's syndrome	Should be administered intramuscularly: the deltoid is the preferred site in adults, the anterolateral aspect of thigh is preferred in infants and younger children	
Women in the 2nd or 3rd trimester of pregnancy during the influenza season		
People who can transmit influenza to those who are at high risk (for example, healthcare providers, caretakers, household members)		
Other groups to consider include people infected with HIV, travelers to regions with known epidemics, and anyone who wishes to reduce their risk of influenza illness		

*At recommended doses, the immunogenicity and side effects of split and whole virus vaccines are similar in adults.

there was a significant reduction in the number of days of febrile illness, in work absenteeism, in health care utilization, and in the use of both antibiotics and over the counter drugs. These benefits were observed despite the fact that the vaccine formulation did not match the dominant variant strain (A/Sydney) circulating during the influenza season that was studied. These data suggest that the intranasal, live, attenuated vaccine may provide some cross-protection against drifted strains.

Amantadine and rimantadine

Two antiviral agents, amantadine and rimantadine, are available in the United States for preventing and treating influenza A. They work by blocking the H^+ ion channel of the M2 protein membrane found on influenza A viruses. This inhibits the acidification of the interior of the virus and ultimately prevents the release of viral RNA.[13] These agents are important adjuncts in protecting unvaccinated people who are at high risk of exposure and in providing supplementary protection for those with diminished response to the vaccine. These agents have been used for seasonal prophylaxis, prophylaxis after exposure, and to control outbreaks in institutional settings. Both drugs are about 70% to 90% effective against influenza A when given prophylactically to adults or children.[1] When used therapeutically within 48 hours of the onset of symptoms, amantadine and rimantadine can reduce the severity of symptoms and lessen the duration of influenza A illness by approximately 24 hours.[1,13] Information on doses and side effects is outlined in table 2.

Despite their efficacy, these antivirals are not widely used because they lack activity against influenza B viruses, carry significant risk for central nervous system side effects (especially amantadine), and can rapidly select for drug resistance during treatment. These shortcomings highlight the need to develop novel strategies to both prevent and treat influenza.

Neuraminidase inhibitors

Neuraminidase is a surface glycoprotein common to both types of influenza. Its enzymatic activities are essential for the release of virions from infected cells; it prevents viral aggregation at the host cell surface and may also inhibit inactivation of the virus by mucus in the respiratory tract.[14] Zanamivir (manufactured by GlaxoWellcome) and oseltamivir (manufactured by Roche) are new antiviral agents that selectively block the active site of neuraminidase. They are newly approved by the Food and Drug Administration for treatment of uncomplicated acute illness caused by influenza A and B viruses in patients who have been symptomatic for no more than 2 days.

The efficacy and safety of inhaled zanamivir in treating influenza A and B have been evaluated in three randomized, placebo-controlled clinical studies. Hayden et al conducted a trial at various centers in North America and Europe.[15] Patients with influenza-like illness of less than

Table 2 *Anti-influenza drugs*

	Amantadine	Rimantadine	Zanamivir	Oseltamivir
Indications	Prophylaxis and treatment of influenza A	Prophylaxis and treatment of influenza A	Treatment of influenza A and B	Treatment of influenza A and B
Treatment dose for adults	100 mg orally twice a day for 3-5 days; start within 2 days of onset of symptoms; reduce dose in elderly patients (100 mg orally daily); adjust dose in patients with renal impairment	100 mg orally twice a day for 3-5 days; start within 2 days of onset of symptoms; reduce dose in elderly patients (100 mg orally daily); adjust dose in patients with severe renal or hepatic dysfunction	2 inhalations (10 mg) twice a day for 5 days; start within 2 days of onset of symptoms	75 mg orally twice a day for 5 days; start within 2 days of onset of symptoms; reduce dose in patients with clearance creatinine <30 ml/min (75 mg orally daily)
Most common side effects	CNS excitation (such as nervousness or anxiety); mild GI side effects	CNS excitation (but more prominent with amantadine); mild GI side effects	Risk of bronchospasms in patients with underlying airway disease	Mild GI side effects (nausea, vomiting)
Precautions	Avoid concurrent administration of CNS stimulants, antihistamines, or anticholinergic drugs	Avoid concurrent administration of CNS stimulants, antihistamines, or anticholinergic drugs	Use with caution in patients with airway disease; instruct patient on use of inhalation device	Advise patients to take with food to avoid GI upset
Average wholesale price for 5-day course*	$6.00 (generic)	$19.00	$45.00	$53.00

CNS = central nervous system; GI = gastrointestinal.
*In October 1999.

48 hours duration were randomized to receive zanamivir inhalation plus placebo nasal spray, zanamivir inhalation plus zanamivir nasal spray, or placebo inhalation plus placebo nasal spray. In patients with confirmed influenza, the median time until all major symptoms were alleviated was 1 day less in patients in the treatment groups compared with those in the placebo group. Similar benefits were observed in the intent-to-treat population. The greatest clinical benefit was achieved in patients presenting with fever at the time of enrollment and in those who began treatment within 30 hours of the onset of symptoms. In these subgroups, the median time until alleviation was 4 days in the treatment groups compared with 7 days in the placebo group. Similar results were observed in studies published subsequently. When initiated within 36 to 48 hours of the onset of symptoms, zanamivir shortened the time until the alleviation of symptoms by 1 to 1.5 days compared with placebo.[16, 17] Again, the most significant benefit was observed in patients who had a fever when they entered the study or who presented within 30 hours of the onset of symptoms. In the small subset of patients categorized as being at high risk (those aged 65 or older and those with respiratory, endocrine, or cardiovascular disorders), symptoms were alleviated 1.5 to 2.5 days earlier among those receiving zanamivir compared with those receiving placebo. Similar rates of efficacy have been observed with oseltamivir phosphate, an orally bioavailable prodrug of the neuraminidase inhibitor oseltamivir carboxylate. In two major trials, treatment with oseltamivir within 40 hours of onset of symptoms resulted in a 1.3 day reduction in the median time until symptoms improved.[18] Transient mild to moderate nausea was associated with oseltamivir treatment.

The use of neuraminidase inhibitors for chemoprophylaxis is currently under evaluation. In a study of more than 1000 healthy adults, zanamivir given once daily for 28 days at the onset of a community outbreak was 67% effective in preventing influenza confirmed by laboratory analysis. No excess adverse events were observed with prolonged use of zanamivir in this study.[19] The efficacy of oseltamivir for long-term prophylaxis has also been investigated in healthy adults. When administered daily for 6 weeks during local outbreaks, oseltamivir was 74% effective in preventing laboratory confirmed clinical influenza.[20] Nausea was reported more frequently in patients receiving oseltamivir than in those people receiving placebo.

The newly approved neuraminidase inhibitors have generated renewed interest in influenza management. Besides having a wider spectrum of activity, these agents are much less likely to induce resistance and are generally well tolerated. Data suggest, however, that treating healthy adults with zanamivir or oseltamivir is only of modest benefit. Data are limited on treatment in elderly people and other high risk populations for whom prophylaxis and treatment would be of greatest benefit. Further studies will better define the role of these agents in regard to public health policy.

The window of opportunity for therapeutic intervention with these agents is narrow. Data do not support the initiation of treatment later than 2 days after the onset of symptoms. Since early initiation is crucial, patients should be counseled on the proper use of these drugs. This is

particularly important for zanamivir, as delivery of the drug is dependent on the proper use of a hand-held, breath-activated inhalation device.

THE COMMON COLD

The common cold is a viral illness that affects adults an average of two to four times each year and affects children four to eight times a year.[21] The rhinoviruses are the pathogens most commonly associated with colds. Although colds are generally mild and self-limiting the economic burden, in terms of visits to physicians, absenteeism from work, loss of productivity, and the cost of treatment, is great.

A definitive treatment for the common cold remains elusive. Treatment is primarily aimed at relieving symptoms. Most treatments are of limited efficacy and are not without side effects. The difficulty in finding a cure for the common cold lies in the fact that more than 200 different viruses may be responsible for the disease. Unlike the treatment of influenza, the development of a single vaccine that could target all the viral antigens is not feasible. Moreover, any new treatments would have to be highly efficacious, nontoxic, and extremely economical to be practical for treating this widespread disease. Pharmacologic modalities that block viral entry into the body and specific antiviral treatments are in development.

Management of symptoms

Resting and drinking fluids remain the standard treatments for colds. Many patients also use over the counter remedies. Each year in the United States, over $2 billion is spent on preparations designed to treat the common cold.[22] A critical review of clinical trials evaluating cold remedies available over the counter found some evidence to support the use of antihistamines, decongestants, and anticholinergic drugs in adults.[23] The review did not find strong evidence to support the use of remedies aimed at preschool children. The literature does not support the use of nonsedating antihistamines (which lack anticholinergic properties) and antitussives, such as dextromethorphan, for managing cold symptoms. In general, recommendations for over the counter products should be tailored to address specific complaints to minimize side effects from multi-symptom formulations.

The inhalation of steam has also been prescribed frequently for treating colds because it was thought that local hyperthermia might inhibit viral replication and improve congestion. A recent study found that inhalation of hot, humidified air had no effect on viral shedding in experimentally induced colds caused by rhinoviruses.[24] It is, however, an inexpensive and nontoxic option for those patients who find that it relieves their symptoms.[21,25] Patient safety should always be considered when prescribing steam inhalation or the use of a steam vaporizer because of the risk of burns, especially in the young children with colds.

Alternative treatments

Despite the limited and conflicting evidence available in the literature, the use of alternative or natural remedies is increasing; this is reflected in the growing selection of products available and marketed for cold sufferers. Two of the most controversial and popular remedies are zinc lozenges and echinacea.

Zinc

Several mechanisms have been proposed by which zinc may be effective against the common cold. At a concentration of about 0.1mmol/L in vitro, zinc prevents the formation of viral capsid proteins and thus inhibits replication of rhinoviruses.[26] Zinc may also have immunomodulating properties and act by inducing the production of interferon.[27] Evidence from clinical trials is inconsistent: several studies found a decrease in the duration of cold symptoms and several others showed a lack of benefit.[28] The discrepancy in efficacy may be attributed to the different doses and formulations used in the trials. It has also been suggested that certain formulations may have rendered the zinc ions inactive.

Overall, the results from studies that found a reduction in the duration of cold symptoms vary, making it difficult to recommend zinc lozenges. Although generally deemed safe for short-term use in adults, the costs of these products as well as the potential for side effects such as unpleasant taste, mouth irritation, and gastrointestinal disturbances should be considered. Patients should also be advised to avoid concurrent use of zinc lozenges when taking quinolone or tetracycline antibiotics because zinc ions may disrupt the absorption these antibiotics.[23]

Echinacea

Echinacea is another remedy gaining popularity in the United States for treating colds. This herb is purported to exert its action through nonspecific immunomodulatory properties. The species most commonly used for medicinal purposes include *Echinacea purpurea*, *E pallida*, and *E angustifolia*. Despite the widespread use of echinacea, supporting data from well designed clinical trials are limited. If echinacea is used early in the course of infection it may decrease the severity and duration of acute respiratory infections.[29, 30] However, until the results of research with standardized dosages and formulations are available, a definitive recommendation about its use for the common cold cannot be made. Echinacea appears to be generally free of toxic side effects.[31] However, it should be avoided by people with autoimmune disorders and by those receiving immunosuppressant drugs (because of a theoretical risk of nonspecific stimulation of the immune system).

Use of this herb is also contraindicated in patients with progressive systemic diseases, such as tuberculosis and multiple sclerosis, in those who are HIV positive, and in people who are allergic to plants of the *Asteraceae* family.[31, 32]

Future developments

Although various compounds have been shown to be active against rhinoviruses in vitro, their clinical efficacy has been disappointing. Recently, investigators have isolated a common cellular receptor responsible for cell attachment that is shared by most rhinovirus serotypes. The identification of this intercelluar adhesion molecule (ICAM-1) provides a target for pharmacological intervention. Specifically, a recombinant, soluble form of the glycoprotein, known as tremacamra, has been developed to inhibit viral adhesion and thereby prevent subsequent colds. When tremacamra was administered intranasally either 7 hours before or 12 hours after viral challenge, it significantly lessened the severity of experimentally induced rhinovirus colds compared with placebo; however, a trend toward a reduction of clinical infections with tremacamra did not reach statistical significance in a pooled analysis of four studies in humans.[33] Another novel antiviral agent, pleconaril, is under investigation for use in treatment against infection with picornaviruses (enteroviruses and rhinoviruses). Preliminary results in humans indicate that treatment with pleconaril significantly reduces the time until symptoms resolve.[34]

EDUCATING PATIENTS

Because of the increase in bacteria resistant to antibiotics in the community (for example, the emergence of *Streptococcus pneumoniae* resistant to penicillin and cephalosporin), antibiotics should be used judiciously in the ambulatory care setting. One study found that more than 50% of adult patients diagnosed with colds and upper respiratory illnesses were prescribed an antibiotic.[35] Similar rates of inappropriate prescribing were also identified in the treatment of children.[36] Prescribing habits need to be changed. Efforts should also be made to educate patients about viral respiratory infections and the ineffectiveness of antibiotics for treating these illnesses.

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CURBSIDE CONSULT

Can exercise-induced muscle damage be avoided?

All athletes have experienced the discomfort and debilitating effects of exercise-induced muscle damage. Symptoms are most common at the beginning of the season when intense training is reintroduced after a period of relative inactivity. A plethora of scientific data describes exercise conditions that lead to muscle damage. It is well accepted that damage occurs with unfamiliar exercise, primarily involving eccentric contractions. For example, downhill running places a large eccentric stress on the quadriceps muscle group and commonly results in muscle damage.[1] However, muscles that have been preconditioned with eccentric contractions are protected against damage from subsequent bouts of eccentric exercise. This muscle damage is known as the "repeated-bout effect" and has been shown with various forms of exercise in both humans and animal models.[2] Despite the many studies describing muscle damage and its various clinical symptoms, few have identified intrinsic causative factors or suitable interventions for limiting the symptoms. Clinically, it is important to first identify people at risk of developing more severe symptoms and then to design interventions that might limit those symptoms. Three recent experimental studies provide clinically relevant information for athletes and physicians.[3-5]

Controlled experimental studies have shown wide variation in symptoms between subjects after a bout of unfamiliar eccentric exercise. These data indicate that some people are more susceptible to damage than others, but it is not clear why. Recently musculoskeletal flexibility has been shown to be an important factor affecting the severity of symptoms after eccentric exercise.[3] Flexibility was quantified according to a measure of passive muscle stiffness, and subjects' muscles were categorized as "stiff," "normal," or "compliant." After a bout of eccentric exercise, subjects with stiff muscles had significantly greater loss of strength, pain, muscle tenderness, and elevation of plasma creatine kinase activity than those with compliant muscles. Greater apparent muscle damage was attributed to the inability of the tendon and aponeurosis of stiffer muscles to absorb the lengthening imposed by the eccentric contractions.

Aris Messinis/AP

Long jumper Adrien Sawyers: even elite athletes risk muscle damage

Warm-up and stretching are known to greatly reduce muscle stiffness.[6] Because stiffness seems to predispose muscles to damage, it follows that appropriately warming up before exercise may reduce the severity of exercise-induced muscle damage. It has also been shown that warm-up reduces subsequent symptoms of muscle damage.[4] Eccentric contractions of the elbow flexors preceded by a warm-up resulted in significantly less loss of strength and elevation of plasma creatine kinase activity than eccentric contractions without a prior warm-up. The protective effect was attributed to decreased passive muscle stiffness, although actual stiffness measurements were not made.

Besides the possible role of warm-ups in limiting the symptoms of muscle damage, preconditioning the muscle with eccentric contractions clearly provides a protective effect (repeated-bout effect). Recent data suggest that it may not be necessary to damage the muscle with the initial bout to provide a protective effect.[5] Brown and associates showed that as few as 10 maximal eccentric contractions of the knee extensors were sufficient to reduce symptoms appreciably after a subsequent bout of 50 maximal contractions performed three weeks later. There was a clear repeated-bout effect despite that 10 contractions did not result in appreciable muscle damage. These data indicate that preconditioning muscles with a few maximal eccentric contractions can considerably reduce symptoms after a subsequent, more intense, bout of eccentric exercise. The key elements for the repeated-bout effect are that the preconditioning contractions are eccentric, that high-intensity contractions are performed, and that the preconditioning contractions affect the same muscle groups that will be working eccentrically in the repeated bout.

All dynamic sports activities involve a large component of high-intensity eccentric contractions, whether the activity is in a game or a practice. Athletes typically experience considerable symptoms of muscle damage when returning to these activities after a prolonged layoff because of injury or between seasons. The severity of these symptoms may be reduced by maintaining good flexibility, especially of the principal muscle groups involved in the given sport; preconditioning the principal muscle groups with a few high-intensity eccentric contractions one to two weeks before returning to full activities; and performing specific warm-up exercises for the

principal muscle groups immediately before the first few training sessions or games. Increasing the athletes' awareness of the cause of symptoms will increase compliance with any intervention directed at limiting muscle damage. This is especially important in sports that do not place a large emphasis on warm-up or flexibility.

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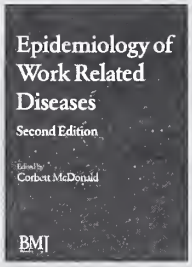

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Culture and Medicine

Anatomy of a medical accident

Judge: "Has the jury reached a verdict?"
Jury head: "Yes, your honor."
Judge: "What is the verdict?"
Jury head: "Guilty."
Judge: "The court finds the defendant guilty of medical malpractice."
The court awards the defendant and his family $5 million, the limit of the malpractice insurance policy.

PRESENTATION OF CASE

The patient is a healthy man who at the age of 32 years moved to a new home in southern California. The family bought a pet cat, and shortly thereafter, the patient began to experience symptoms of allergic rhinitis that were initially treated with over-the-counter antihistamines. The symptoms persisted. The patient consulted his physician, who continued the antihistamine therapy, added nasal steroid medications, and recommended environmental control. Skin testing revealed strong allergy to cat, dust mites, and numerous local pollens. Although the patient complied with the antihistamine and nasal steroid treatments, the cat remained in the house, carpets were left in the bedroom, and dust and mold controls were ignored.

Following an upper respiratory tract infection, the patient developed sinusitis. This was treated with antibiotics. Chronic sinusitis ensued, and the patient was referred to an otolaryngologist. A computed tomographic scan showed chronic sinusitis, and endoscopic sinus surgery was recommended. The physician advised the patient not to use any aspirin or nonsteroidal anti-inflammatory agents for at least two weeks before surgery. Three days before the operation, the patient attended an office party and had too much to drink. He took several aspirin-containing seltzer tablets for his dyspepsia.

The evening before surgery, the physician had two glasses of wine and went to bed at 10 o'clock. At 10:30 PM, he was called by the emergency department about a patient with epistaxis, and at midnight, after being called again, he went to the emergency department to control the nosebleed. He returned home at 2 AM and went to bed, but slept fitfully. He arose at 6 AM, still feeling tired.

The first three endoscopic surgeries of the day went well. A general surgical emergency delayed the fourth endoscopic sinus surgery, so the fourth operation began at 4 PM. A new anesthesiologist, a new scrub nurse, and a new circulating nurse, all unaccustomed to endoscopic sinus surgery, staffed the operation. The hospital, a managed care facility in southern California with financial difficulties, was not equipped with several state-of-the-art instruments, such as through-cutting forceps ($500 each) and an image-guided endoscopic sinus system ($125,000).

At surgery, the nurses and the anesthesiologist positioned the patient incorrectly by extending his head by 15 degrees, thereby changing the normal angle of operation. The surgeon, who was scrubbing, did not see this. The anesthesiologist, not understanding the importance of controlled systolic hypotension, maintained the patient's blood pressure at a systolic pressure of 120 mm Hg. The combination of the patient having taken aspirin and the level of the systolic blood pressure led to persistent oozing of blood throughout the operation. The physician's vision was, therefore, impaired.

While the physician was clearing the ethmoid cells from the roof of the anterior ethmoid, a vertical bar of bone was grasped with an upbiting forceps. When the bone was removed, a small piece of overlying cribriform was fractured and removed as well. Cerebrospinal fluid started leaking but was not noted because of the oozing of blood. The patient went home that evening. On the third postoperative day, the patient developed a mild headache. He called the emergency department and was told that this was not uncommon following nasal surgery and that he should take his prescribed pain medications. The next day, the patient was brought to the emergency department, where he was noted to have pain on cervical flexion and to be mildly obtunded. A computed tomographic scan showed a 1-cm hole in the anterior cribriform plate. A spinal tap was done, and a diagnosis of meningitis was made.

The patient was admitted to the hospital, intravenous antibiotics were given, and the leak of cerebrospinal fluid was repaired. The patient was discharged 30 days later, having sustained permanent brain damage that left him totally disabled and unable to work.

THE MALPRACTICE SUIT

A malpractice suit was filed. The plaintiff's attorney, who held doctor of medicine and doctor of jurisprudence degrees, had extensive medical malpractice success. The expert for the plaintiff, a 70-year-old retired physician, stated that he had performed "thousands" of ear, nose, and throat operations, and in the many nasal operations he had carried out, he had never created a leak of cerebrospinal fluid. None of his patients had developed meningitis after nasal surgery. It was his opinion that this event fell outside the standard of care. The expert for the de-

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fense, a young academic surgeon, explained the complexities of endoscopic sinus surgery and the potential complications. He stated that cribriform fracture and resultant meningitis were uncommon but known complications of endoscopic sinus surgery. This was, therefore, not a departure from the standard of care.

The jury of 11 people did not fully understand the science, the disease, the operation, or the complications. So deliberations were based on assessing conflicting expert opinions. The jury was unable to come to a decision regarding malpractice, but a man and his family were left disabled, and someone must pay. The jury handed down a judgment of guilty, and the plaintiff was awarded the maximum of the malpractice insurance policy.

This is not a true story but a simulated case that represents what can happen after an adverse medical outcome. But is this, in fact, a single technical error or a more complex problem? There is a science that permits a more thorough analysis. The following analysis is based on principles used by the transportation industry to investigate major accidents.[1,2]

CASE ANALYSIS

A detailed analysis of the events leading up to the accident shows many compounding problems. "Accident" is defined by Webster's Third International Dictionary (1986) as "an event or condition occurring by chance or arising from unknown or remote causes." Accident does not infer causation or responsibility. The patient, to a large degree, was responsible for his illness because he and his family ignored environmental control, allowing his allergic rhinitis to develop into chronic sinusitis. Despite being advised not to take any aspirin before surgery, three days before, the patient took several aspirin-containing seltzer tablets. The patient's actions contributed to the bleeding that hampered the surgeon's ability to see the surgical field well during the operation.

The physician was impaired by the lack of sleep due to the calls from the emergency department. The effect of two glasses of wine is not known. Pilots are prohibited from drinking alcohol for 24 hours before flying and are restricted in the number of hours they can fly. No similar guidelines exist for medicine.

The hospital contributed to the accident. The usual operating team had gone home and an anesthesiologist and a nurse who were unaccustomed to endoscopic sinus surgery were called upon to perform the emergency operation. The anesthesiologist failed to maintain a moderated systolic hypotension and the nurses and anesthesiologist improperly positioned the patient. The physician, who was not well rested, was interrupted in the operating room by telephone calls and pages and was distracted by annoying background music. Bleeding at the time of surgery obscured the normal, clear operating field. The lack of an upbiting, through-cutting forceps required the physician to use a standard upbiting forceps. Instead of cutting the vertical bar of ethmoid, the bone was fractured and resulted in the cranial fossa hole. Without the benefit of multiplanar image guidance, the physician did not realize the immediate proximity of the cribriform plate.

The trial was flawed by several factors. The plaintiff's physician-attorney was more skilled than the less experienced (and not medically qualified) defense attorney. The expert for the plaintiff was a retired physician who had never performed endoscopic sinus surgery; nevertheless, he proved to be a master of presentation. The expert for the defense was a young academic surgeon. The court made no attempt to perform an independent analysis. The jury was unable to make an informed opinion regarding causation, but felt that the operating surgeon had to be responsible and so handed down a guilty verdict. Whether the judge fully understood the complexity of the case, he accepted the verdict and awarded the full amount of the insurance policy.

A review of the literature indicates that this kind of accident is caused by a series of errors, some in the system and some as a result of human factors. According to Wagenaar and Groeneweg, Dutch psychologists,[1]

> Accidents appear to be the result of highly complex coincidences which could rarely be foreseen by the people involved. The unpredictability is caused by the large number of causes and by the spread of information over the participants . . .accidents do not occur because people gamble and lose, they occur because people do not believe that the accident that is about to occur is at all possible.

Reason describes several important concepts.[2] First, he distinguishes between active and latent failures. Latent failures are those intrinsic to the healthcare system. Examples of latent failures might include inadequate resources to staff an operating room for emergencies, poorly designed instruments, and an insufficient volume of a given procedure to have multiple layers or teams of persons available to perform operations. Active failures are the errors of commission. For surgeons, these are generally anatomic. For organizations, these are the differences between the ideal and the real, commonly the balance between production and protection. Production is the most efficient use of available resources. Protection is the investment in personnel, technology, and safety.[2]

Reason writes, "With hindsight, it is nearly always possible to identify prior to a disaster, the presence of

warning signs which, if heeded and acted upon, could have thwarted the accident sequence. The question that often arises after the event is: How could these warnings have been missed or ignored at the time? There are a number of possible reasons why this happens, but most of them have to do with the fact that after the fact observers armed with "20/20" hindsight view events quite differently from the active participants who possess only limited foresight. Knowing how the events turned out—what psychologists have called outcome knowledge—profoundly biases our judgment of the actions of those on the spot."[2]

The medical accident was the fracture of the cribriform, which set the stage for the resultant meningitis. The oozing of blood was not sufficient for the surgeon to abort the operation. However, it hampered the physician's ability to recognize that the cribriform rupture had occurred. Had the emergency department physician evaluated the headache a day earlier, the meningitis would have been diagnosed and treated 24 hours earlier, thereby reducing the effect of the brain injury.

CONTRIBUTING FACTORS

When the substantial contributing factors are analyzed, the patient is seen to play an important role. He developed the disease, failed to comply with medical therapy, overimbibed, and, contrary to his physician's advice, took medicine that contained aspirin. The surgeon contributed by consuming alcohol the night before the operation, having his sleep interrupted, and failing to recognize that the late afternoon surgery had sufficient problems that it should have been delayed. He also failed to recognize the extended head position, performed the operation with instruments that were less than optimal, and failed to recognize the cribriform rupture and the resultant leak of cerebrospinal fluid when they occurred. The environment of the operating room has evolved over time. Music, telephones, and beepers are all distracting factors. Health care professionals have become so accustomed to these environmental intrusions that they are no longer questioned. However, consider the cockpit of a jetliner. Intrusions like music, pages, and telephone calls that are permitted in the operating room are not permitted in other "dangerous" environments.

Staffing and hospital decisions contributing to the accident are based on the production/protection issues. Society and physicians, striving to maximize their production, push themselves beyond optimal workloads. Inadequate staffing of nurses and anesthesiologists fully trained for each operation represents a problem of production versus protection. Again, comparison with the aviation industry is valuable. Does a flight attendant trained in one airplane have the skills to switch to a different plane? The airline industry says no. A pilot trained on one aircraft is not permitted to fly an alternate plane without going through extensive training.

New and better instruments are constantly being developed and are expensive. Not every hospital can have every technologic advancement. Many of these issues could be addressed by identifying areas of expertise—that is, if one hospital and one set of physicians agree to do ears, nose, and throat surgery, perhaps a neighboring hospital could be responsible for general surgery. These kinds of agreements run counter to today's competitive environment. Lack of volume is a substantial contributing factor.

The emergency department physician was not named in the malpractice suit and was not considered a substantial contributing factor. While he or she may not have caused the accident, the damages may have been ameliorated had the meningitis been diagnosed earlier.

The result of the medical accident is multiple, the most obvious being an injured, disabled person. His family is also affected for they lose a husband, a father, and a provider. Another casualty is the medical system. The malpractice suit will permanently taint the physician's attitudes toward the practice of medicine. The physician will need to pass on the costs of his malpractice insurance to his patients. Adams writes,[3]

> Fear of being sued for malpractice is one of the greatest tragedies of modern medicine. This thief of the joy of medical practice has stolen the physician's humanity. Our society is saying that we don't have the right to make mistakes. We must have the right to make mistakes. Medical science is so imperfect that it is impossible to know for certain, before treating a patient, what the outcome will be.

Our adversarial judicial system, alleged to be the finest in the world, is filled with latent error. Today's technologic world can no longer be reasonably evaluated by a lay jury. The O J Simpson trial [4] clearly demonstrated the deficiencies of a lay jury. The self-proclaimed medical experts have no qualifications other than their own representations. Impartial investigation is neither available nor required.

Society must accept some responsibility. Society does not wish to pay for the full cost of today's medical practice. Yet, it wishes to reap all the benefits. The practice of medicine is not the same as the production and sale of widgets. A defective hula hoop is not the same as a fulminant meningitis with resultant long-term disability. Many industries are regulated, a classic example being the aviation industry. Physicians have successfully resisted this intrusion, but they seem unable to regulate themselves. Perhaps the time has come for external oversight.

How might the risk of such accidents in the future be reduced? First, strict protocols should be developed for all serious medical intrusions. The aviation industry operates "by the book." It has protocols and checklists, and each and every step is performed and checked off before moving to the next. Even airline maintenance runs by protocol and checklist. The same is possible for medical activities.

Second, medicine has not learned from its accidents and near misses. Physicians conduct morbidity and mortality conferences and have scientific study, but medicine does not use the rigorous accident analysis that is applied to other industries, specifically the transportation industries and the nuclear reactor industries. If impartial accident analysis became routine, substantial contributing problems could be identified and possibly decreased.

CONCLUSIONS

Medical accidents are inevitable. Society and the medical profession should begin to use the science of accident analysis to understand and prevent some of them.

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COMMENTARY

An honest mistake, within the standard of care, will not result in a finding of liability

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Several aspects of Davidson's premise in his description of a medical accidents do not fairly and adequately explain or represent the majority of cases of medical negligence. It is worth noting that a natural tension exists between the plaintiffs bar (those representing the patients) and the medical community, some of which is real and some of which has been overstated. One such overstatement is that the premiums for medical malpractice insurance are increasing as a result of jury verdicts that are out of control. The true cost of medical malpractice is only a few cents of every medical dollar. The professional liability insurance companies have tried, quite successfully, to overstate the true effects of medical malpractice awards in an attempt to keep premiums, and thus, profits very high.

At the outset of his article, Davidson uses the word "accident" and goes so far as to define the term. I subscribe to the notion, however, that there are few true accidents. An accident is, at least for me, an unavoidable event that could not have been foreseen by a reasonable person at the time the act took place. For example, a driver looking down to make a phone call, who thus is unable to see traffic that has stopped 20 m ahead, and runs into the car in front of him, is said to have "had an accident." Not so. This person engaged in an act that was "a foreseeable consequence of inattention." Thus, I use the word incident (a more neutral term) to describe most events that cause injury.

Most cases of medical negligence our legal firm has handled involved acts in which the harm could easily have been foreseen and the doctor's failure to prevent the harm was the cause of injury. One example is the dentist who poured a paper cup full of isopropyl alcohol for use in sterilization and left the cup on the patient's tray next to an aspirin. Another example is a doctor who, despite realizing that a patient had hypoxia 3 weeks post partum, did not consider the risk of embolism and did not perform any test to determine the level of blood gases. The patient died of a pulmonary embolism. The list can go on.

But here's the bottom line. The legal community often, in seeking redress for the victim or the victim's family, is sending another, louder message. Be careful. Yes, mistakes happen, but an honest mistake, when it is within the standard of care, will not result in a finding of liability.

Davidson refers to the jury's determination of guilt or innocence. In reality, juries in civil cases make no such judgments. The verdict is simply whether or not the doctor was negligent. It's that simple. In California, at least 70% of all cases of medical negligence end in a verdict in favor of the doctor. Does Davidson believe that the jury system is broken when 70% of the cases that are tried to juries turn out in favor of the doctor? The standards of care are never that easy to define, but it is overly simplistic to suggest that the plaintiff's lawyer is capable of outgunning the doctor's lawyers and experts. Far more often, the attorney for the plaintiff is confronted with experi-

enced attorneys who have at their disposal the best in the medical community who are happy, for a price, to step forward and proclaim the "innocence" of the unfortunate doctor.

I prefer to believe that the medical community and the plaintiffs bar are united in the common ideal of providing competent medical care and thus holding responsible those who engage in conduct below the standard of care. I have always viewed the role of the attorney as trying to prevent injury much as the medical community strives to prevent illness. Medical malpractice is inevitable, but practicing within the standard of care offers more than a safe harbor for medical negligence claims, it offers protection for your patients.

Placebo-controlled trials: good science or medical neglect?

The placebo-controlled clinical trial has a long history of being the standard for clinical investigations of new drugs. By blindly and randomly allocating similar patients to a control group that receives a placebo and an experimental group, investigators can ensure that any possible placebo effect will be minimized in the final statistical analysis. Although this approach to clinical research is scientifically sound, ethical concerns arise in some cases that outweigh the benefits of this protocol design. Even though patients may be advised of the likelihood of being placed in a placebo group and that the intent of the clinical trial is research, not medical care, they often hope for some level of treatment. More importantly, when effective treatments exist, research participants who have progressive, burdensome disease should be given standard treatment as the control agent.

Using a recent example of a clinical trial of a new drug for treating rheumatoid arthritis, we argue that research participants who have burdensome, progressive disease should not be exposed to the risks of placebo-controlled trials. Historical controls and active controls may need more people in a particular trial but do not deprive patients of approved treatment. We propose several guidelines for considering the ethical use of placebo controls in clinical trials and call on research regulatory agencies to standardize their recommendations.

Summary points

- The use of placebo controls in clinical research that involves patients who have an active disease for which there is approved treatment is ethically questionable and may represent substandard care
- The use of active or historical controls in clinical research may address these ethical questions
- Federal guidelines say that a condition of clinical equipoise should exist before a placebo-control study is started. Although this is a reasonable guideline, sponsors or investigators may be ignoring it
- Research participants with active disease are likely to believe they will possibly benefit from taking part in trials. This therapeutic misconception may not be obviated by an informed consent form

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A NEW DRUG FOR TREATING RHEUMATOID ARTHRITIS

In August 1998, the Arthritis Advisory Committee for the US Food and Drug Administration unanimously recommended approval of a new drug for the treatment of rheumatoid arthritis.[1] The new compound won approval from the advisory panel because of its efficacy in treating both the symptoms and the progression of this disease and because of its favorable profile related to some side effects. In the phase 3 study that led to approval, 482 patients with active rheumatoid arthritis were enrolled in a 1-year, multicenter, randomized, double-blind, parallel-group study that compared the new drug with methotrexate or placebo.[2] Symptoms decreased in 41% of those who were given the study drug. Approximately the same percentage of patients given methotrexate had subjective improvement, but only 19% of those given placebo reported symptomatic relief. Structural damage to bone and cartilage occurred four times faster in the group taking placebo than in either of the groups that were given active treatment.

This medical breakthrough represents a major step in the medical treatment of a large number of people with rheumatoid arthritis. Of equal importance, however, is that 118 of the 482 subjects studied were given a placebo

for 1 year and closely monitored while an irreversible disease process that could have been mediated by an approved drug was allowed to advance. For this unfortunate group, the wisdom of placebo controls is unclear.

THERAPEUTIC TRIALS AND THERAPEUTIC MISCONCEPTIONS

Clinical trials frequently recruit volunteers with active disease or conditions for which treatment is normally prescribed. Regardless of disclaimers made during the consent process, such participants often hope that the experimental therapy will improve their condition.[3,4] This discrepancy between a subject's hope for a cure and the experimental objectives of the research protocol has been termed the "therapeutic misconception" and explains, in part, why the standards for the protection of and disclosure to research subjects are higher than those for patient consent to medical care.[5-9] These standards need sponsors and institutional review boards to exhaust all possibilities for alternative research designs before a placebo-controlled trial is conducted with participants who have active disease for which approved treatment exists. If patients with rheumatoid arthritis were given the wrong medicine by a physician and their medical condition declined, they would be justified in making malpractice claims. Why, when the ethical requirements for protection and disclosure are appropriately more stringent for clinical research, is such a study design considered scientifically justified? Even if the demands of science argue in favor of such a protocol, the canons of ethics forbid it.

CONFLICTS IN ETHICS AND REGULATIONS

The Nuremberg Code, the Declaration of Helsinki, and the Belmont Report have all provided the framework for the current Office for Protection from Research Risk (OPRR) guidebook that informs institutional review boards in their assessments of human subjects protocols.[10-13] All of these documents base their guidance on protecting human participants. At times, however, federal regulations may conflict with the ethical guidelines provided by the OPRR.[13,14]

Although ethical guidelines do not rule out placebo-controlled studies, they emphasize the well-being of participants and the need for scrutiny by an institutional review board.[12,13] Risks of "serious impairment" require extraordinary justification, and placebo controls are not to be used if there is evidence of the efficacy of another treatment or "good evidence" that the experimental therapy is effective. These guidelines call on institutional review boards to perform a careful risk-benefit analysis when considering whether to allow a placebo-controlled trial. In addition, the investigator must be able to "honestly . . . state" a condition of "clinical equipoise."[13] However, investigators are advised that "the control treatment must be the best standard therapy currently available."

A possible reason for the persistence of placebo controls in many drug trials is that research that is privately sponsored must answer to the Food and Drug Administration to get approval for new drugs. Placebo-controlled clinical trials still seem to be required for the Food and Drug Administration to approve the use of a new drug.[3,13,14]

FOOD AND DRUG ADMINISTRATION GUIDANCE

The Food and Drug Administration addresses the ethical concerns of using placebo controls by suggesting that such trials may be short, should provide for withdrawal if a participant's condition worsens, and should frequently monitor the progression of the disease. Investigators are warned that the quest for statistically significant differences between placebo effects and experimental therapy does not justify exposing participants to "documented serious risk."[15] These guidelines stop short of defining serious risk, leaving that determination to sponsors and institutional review boards.

Yet, the Food and Drug Administration has historically withheld its approval of some drugs when placebo controls were not used.[3,14,16] Three defenses for this decision have been advanced.[16,17] First, a large number of participants is needed to show significant difference in the effects of two drugs that mimic each other. Second, trials that are intended to show no significant differences between two therapies—that is, that two drugs are therapeutically equivalent—could reduce the emphasis on strict scientific conduct. Third, equivalence trials assume that the active control was effective specifically in the study in which it was used and, thus, would have been superior to a placebo had one been used. We will address each of these concerns separately.

Number of subjects

If a new drug is being compared with an existing therapy that is known to be effective, the sponsor will either have to settle for showing equivalency or, in addition, a more favorable profile of side effects. Two medications with similar effects may show significant differences when compared with a placebo but not when compared with each other. Although sponsors may balk at the prospect of lengthy trials with a large number of participants, the

equivalence-versus-superiority argument is a marketing concern and does not ethically justify exposing participants to an avoidable risk.

Incentives for study excellence

The second issue is an ethical rather than a statistical one. Equivalence trials are intended to show the comparability of new and existing therapies, and anything that obscures differences (favorable or unfavorable) between the two would help support this claim. Some have argued that this provides an incentive for investigators to be lax in screening potential participants for inclusion, assessing outcomes, and monitoring compliance. This behavior jeopardizes scientific integrity.[18]

Consistency of active control effect

The third concern, about active controls, is that showing equivalence to an active control assumes that the control (drug) would be superior to a placebo had one been used in that particular trial. Approved drugs, by definition, have shown efficacy as part of the Food and Drug Administration approval process. If an approved drug with a historical profile is used as the control for an investigation involving a disease with objective measures of progression or remission, then it is unnecessary to make assumptions regarding the drug's efficacy in the current trial.

PLACEBO-CONTROL GUIDELINES

We propose that definable conditions exist that should be addressed before placebo-controlled trials are permitted to proceed. The assessment of these clinical conditions is grounded in the ethical requirements outlined in the Belmont Report[12] and reflects the current guidance of the OPRR guidelines. For the approval of placebo controls in phase 2, 3, and 4 trials, the following questions should be considered:

- Do participants have a disease or condition for which treatment is available, normally prescribed, and of known efficacy?
- Will lack of treatment likely result in progression of the disease or condition or the infliction of pain or suffering during the trial?
- If the disease or condition progresses, is this likely to be reversible?
- If the disease process is irreversible, how great is the burden of this progression, and how likely is existing treatment to resolve or reduce this burden?
- Is there substantial evidence that the experimental treatment is of therapeutic benefit?

The answers to these questions should serve to guide institutional review boards in determining whether a placebo-control group is justified. Complete ethical accountability requires that sponsors, institutions, and investigators accept responsibility for subjects who suffer harm because they were given a placebo rather than an available standard therapy. A signed consent form should not shield investigators from claims of malpractice if standard therapy for a condition was intentionally withheld and the subject suffered irreversible harm.

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Medical practice 2010: how we get there

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Case history

Adele F, a 60-year-old mother of two, wakes up short of breath, with a dry cough. She has had congestive heart failure, which is well controlled, for three years. Recalling what she has learned from her physician and her patient group (for people with congestive heart failure), she is concerned that her heart failure may be getting worse. She also realizes that she could have a respiratory tract infection. She steps on the scale that she was given at the time of her diagnosis.[1] She pushes a few buttons to answer its audio questions, knowing that the answers will be sent directly to her health care team, who will contact her in the next few hours. Using audio prompts, she finds and reviews information in the electronic handbook for patients with congestive cardiac failure. She verifies that her medication schedule is up-to-date. The handbook reminds her to put on the gown with electronic sensors that transmit her vital signs, including her oxygen saturation, to her health care team through the telephone line. She then sits down to eat breakfast while waiting to be contacted.

Dr G, who is Adele F's primary care physician, is given information about her symptoms and data while checking electronic messages. The team member handling incoming transmissions has already noted that Adele F has a fever and sinus tachycardia and arranged for the patient to be seen. Later, Dr G is prompted by an algorithm—based on the World Wide Web—which reviews the physician's notes, that the findings of Adele F's physical examination are consistent with bronchitis. Assessing information from patients seen in the past few weeks, Dr G recognizes an increased incidence of viral infections in the local area. She also notes that Adele F's weight and vital signs are stable, confirms that she is receiving the right medications and assesses her management of congestive heart failure against an interactive guideline that allows therapy to be tailored to groups of patients with similar demographic and clinical profiles.

Summary points

- Advances in communication and information technologies as well as growing demand by patients to meet more of their health care needs will drive changes in medical practice
- Physicians will look at and understand how they fit into larger organizations and systems of delivering care
- New models for office visits and methods for electronic communication will improve the timeliness of patient interactions
- Clinical care will be prompted by evidence provided by decision support systems

Rapid advances in scientific knowledge and technology, along with shifts in population demographics, the financing of health care, and the management of patient information, have dramatically changed clinical practice. Magnetic resonance imaging, minimally invasive surgery, health maintenance organizations, drug advertising directed to consumers, and physician profiling were unimaginable in mainstream practice two decades ago. Clinical practice in 2010 will be profoundly different from that in 2000.

Predicting the future is a tricky business. Futurists note that we typically overestimate the effects of change in the short run and underestimate its effects in the long run. By focusing on the fundamental forces already in place that will shape the practice of future physicians, we can better estimate their likely effects.

Imagine a typical day in the life of today's primary care physician—practicing in an office, seeing patients who have been scheduled well in advance, and recording information in a paper medical record. The physician focuses largely on chronic illnesses while making clinical decisions based on his or her knowledge of the illness and the patient, derived mainly from personal recall. Fast forward to 2010. We think that a typical day for physicians who are organizationally sophisticated will be spent in offices with open-access scheduling, providing clinical care to individuals and groups of patients, extensively using electronic technology, and practicing evidence-prompted care that incorporates knowledge of groups and of individual patients. What will drive such changes will be the availability of increasingly advanced communications and information technologies and the growing demand by patients that a broader set of health needs be met.

In the past two decades, one of the most important changes in the practice of medicine has been the shift from physicians who are freestanding, independent professionals to physicians who are providers in a system or systems of care.[2] This shift has been fueled largely by changes in the financing and providing of health care. In an environment of health maintenance organizations, integrated and expansive networks of care delivery, and the increasingly complex care for chronic illnesses, physicians are more aware of their interdependence and their need to interact closely with other health professionals to provide high-

quality health care. Most recently, the tension between individual physicians and the health care system has been underscored by the Institute of Medicine's report on the 98,000 deaths caused annually by medical errors.[3] The unmistakable conclusion of the report is that errors occur because no system exists to prevent them and because people do not know how to make such a system work effectively. Although more physicians work within systems—whether through insurance contracts or through employee relationships—few understand or have been trained in using a system to improve care for their patients and to enhance the quality of their professional lives.

Systems or organizational thinking focuses on seeing and understanding the cycles of cause and effect and interrelations that make up organizational life and influence outcomes.[4] Existing examples of organizational thinking include disease management programs. In such programs, there is an explicit identification of interrelations between sites and providers of care and a feedback process for adjusting care to reflect changes in information or elements of the system. For example, for patients with pneumonia, the route by which antibiotic therapy is given or the location of care could be automatically changed based on changes in their oxygen saturation.

PHYSICIANS AND ORGANIZATIONS

By 2010, physicians will be increasingly linked—functionally, financially, electronically, and psychologically—to and within organizations. Those successful physicians who will take the lead in these settings will see their work with patients, other health professionals, and health delivery systems as contributors to a whole system of care. As a result, population-based care—focusing on common patterns in assessing and managing the health of groups of patients—will be seen as a logical tool for providing quality care through interactive relationships among all elements of the organization.[5] The focus will be on providing quality care for people, particularly patients with chronic illnesses, in the larger context of a population receiving health care. The common traits of care that is focused on groups or populations (that is, patient education, delegation, and intelligent use of information systems)[6] embody systems thinking. Systems thinking includes an understanding of interdependencies in organizations, the need for collaborative interaction with health care teams, and for some physicians, a proficiency with the methods and tools of systems thinking.[4]

THE CHANGING FACE OF PATIENT INTERACTIONS

Physicians who are linked to organizations will see enormous differences in the scheduling of patients and the content and site of patient interactions. Patients will be seen in locations and on schedules that are more adapted to the patients' needs. Already the Institute for Healthcare Improvement is studying the use of "open access scheduling," which allows patients to be scheduled the day they call in, thus eliminating long waits for routine office visits. Combined with efforts to reduce routine appointments for chronic and preventive care, this approach is reducing patient demand for visits while increasing revenue and satisfaction of both physicians and patients.[7]

The use of new media such as electronic mail and the Internet for communicating with, educating, and treating patients is already occurring.[8,9] These options for communication will shift the sites of care, providing greater flexibility for both patients and physicians. Preventive care will be addressed without visits because these discussions can occur electronically. In other examples, such as teleradiology—a means of electronically transmitting radiographic images and consultative text from one location to another—a broader range of care will be provided to locations where access to specialty care is not available. Teleradiology is available and under study by the National Library of Medicine as a mechanism for providing a broader range of care to rural locations (for a more detailed description of this technology, see the web site at www.everest.radiology.uiowa.edu/nlm). Online diagnosis and assessment mechanisms already allow the use of cybertherapy (see the web sites www.healthtechsys.com and www.mediconsult.com). In cybertherapy, health care providers use the Internet to diagnose and treat individuals, reducing the need for office visits. The most valuable advances will be those that increase communication and the timeliness of interactions—criteria increasingly deemed to be essential throughout society.

NEW MODELS FOR PATIENT VISITS

Increasingly, advances in technology and communication will be understood in the context of meeting patients' needs, and this will, in turn, lead to new models for patient care visits. Group visits for primary care represent one of the biggest changes in outpatient care in the past century. Such visits enable greater access, education, and communication between patients and health professionals and among patients themselves. In addition, patient peer groups for the self-management of chronic illnesses can improve health outcomes and reduce rates of hospitalization.[10,11] We anticipate that medical visits in 2010 will be some combination of individual and group visits, depending on patients' preferences and health issues. Face-to-face interactions will continue to play an important role, but there will be more options and mechanisms for providing health care. Advances in technology will increase, not lessen, the importance of care based in teams.

The changes described here have in common a focus on increasing patients' knowledge and empowerment about health issues while increasing their responsibility. These changes rightly give patients an active role in their own health care—which is essential, given the role of lifestyle, health behavior, and environment on health status.[12]

EVIDENCE-BASED CARE

The provision of health care, regardless of setting, will be prompted by evidence provided by decision support systems. In addition to being based on sound scientific knowledge, this support will be informed by access to real-time information about the patient and groups within the organization. Preventive care and management can be tailored by this up-to-date information. This will be feasible because of technologic advances that ensure that electronic records are secure and allow connections across health systems. For example, electronic reminder systems—using pagers and cell phones—will prompt patients and their health care team about preventive strategies and the management of chronic disease. Patients, physicians, and other members of the health care team will be able to identify and compare best practices for care and health outcomes within organizations and geographic areas. Physicians will be able to compare their quality and patterns of care with those of their colleagues and improve quality of care through the timely and systematic collection of data. This ability to identify and compare practices will also allow clinicians to identify topics for continuing education. It will allow teams to characterize patterns of care to improve patient outcomes and distribute professional responsibilities. For example, a primary care physician who provides exemplary care to patients with asthma (as judged by outcome measures for patients) may choose online education to remain abreast of asthma care, but focus on other topics in which he or she would like to improve patient care. In addition, this physician will be a resource or mentor for other health professionals who need to improve their care of patients who have asthma. An information system that is organizationally linked will also allow physicians to evaluate new technologies or research established guidelines for their use.[13] Electronic systems that link pharmaceutic information—prescriptions, drug information and interactions, and records of patients' adherence to medications—will reduce medical errors, the eighth leading cause of death.[3] Thus, these data can be used to evaluate care that has been provided and to prompt care that needs to be given.

PATIENTS ARE STILL THE FOCUS OF MEDICAL CARE

The vision we outline for future medical practice retains a key common element with current practice—patient interactions remain the focus that they merit in health care. Technologic advances, increased knowledge, and structural changes in where and how practice occurs will reduce the time spent recording and tracking the processes of health care and increase the focus on improving health. There will also be greater coordination of the efforts of health care teams. The primary skills of physicians will then be the ability to develop empathic relationships with patients, to incorporate knowledge of patients into making decisions about health care, and to educate patients about their health.

In addition, future physicians will be capable of looking at the overall system of care that is provided and to see how they themselves fit into a larger organization and system of delivering care. They will take a population approach that embeds cost-effectiveness into decision making. With this approach, the equation is not "all things that may be beneficial for each individual patient," but rather "doing what is best for our patients within the context of the organization within which we practice and its resources." Equally important, physicians will have the tools and the information to guide this philosophy. The future clinician will recognize that the practice of medicine has shifted from the individual physician telling the individual patient what to do to a team of health professionals in an organization that counsels and teaches a collective group of patients how to get healthy, to stay healthy, and to take care of any illnesses they may have. As medicine moves toward this vision, physicians who will be practicing should acquire or hone their ability to change and nurture their interest and ability to learn.

RECONSIDERING THE CORE ELEMENTS OF MEDICINE

All the changes forecasted here will challenge the medical profession to reconsider the core elements of the practice of medicine. Clearly, the financing of health care will continue to change to encourage successful innovations in practice. The downside is that many of the traditional practices that do not contribute to improved health or well-being may be discounted or not reimbursed. Medicine will have to reconstruct many of the ethical precepts that were developed to serve and explain health care in a different day and time. This task will take great patience and leadership.

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A Book to Make You Think

The Unequal Burden of Cancer, M Alfred Haynes, Brian D Smedley, Editors, National Academy Press, ISBN 0309071542. 350 pp, $39.95

Poverty is the most important risk factor for excess morbidity and premature mortality, and it is disproportionately distributed among ethnic groups in the United States and around the world. Moreover, there are striking differences among ethnic groups in the incidence of cancer. Compared with white Americans, Asian Americans have substantially lower, and African Americans substantially higher, incidence of and mortality from prostate cancer.

These are distinct issues, the first arguing forcefully for social justice, and the second allowing intriguing insights into the environmental causes of cancer. *The Unequal Burden of Cancer,* commissioned by the Institute of Medicine of the United States, does not adequately distinguish between the two issues, so that its recommendations, although laudable, may not be as effective as they might have been. The implementation of preventive measures depends on behavioral research that is culturally sensitive, and accessibility and use of medical services need to be studied in the context of their sociocultural environment. However, etiologic research rarely benefits from the inclusion of small groups of people of different ethnic backgrounds, such as a small group of rural Greek women in a large sample of American women. The analysis would have to adjust for ethnic background and the presence of heterogeneity, and the underlying motive of research that is ethnic-specific can rarely be substantiated. The statement of the director of the National Cancer Institute that issues of special interest to different ethnic groups regularly spring from research done in other ethnic groups is no doubt true. For example, the causation of hepatocellular carcinoma by hepatitis B and C viruses, the causation of cancer of the cervix by certain types of human papillomavirus, and poverty as a risk factor of overriding importance for stomach cancer are all findings particularly relevant to poor people and ethnic minorities and all have sprung from research on homogeneous, nonethnically mixed samples.

That said, the book is more interesting than such reports usually are and provides useful information for those interested in the occurrence and control of cancer among various ethnic groups. Several recommendations, particularly those focusing on medical treatment and survival and those criticizing the accounting methods that have been used to assess the ethnic relevance of research sponsored by the National Institutes of Health, are realistic and sound. The book also frequently makes a point that should never be underestimated—that ethnic minorities are minimally different groups of our one race, the human race.

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West of the Rockies

Speaker's Corner

Reasonable accommodation: how much and how far?

Sometimes I wonder what it is like to hear perfectly. I also wonder what would have become of me if I could. Would I have had the same resolve to become a doctor? Does a disability hold a person back, or does it push them forward?

In 1990, the Americans with Disabilities Act was passed. Even though the Rehabilitation Act of 1973[1] contained the basic laws requiring provision of the services I would need to complete medical school, the Americans with Disabilities Act made those services more readily available. While in medical school at the University of California–Los Angeles (UCLA), I was provided with sign language interpreters for classroom lectures, clinical rotations, and all other activities requiring communication in a group. When I am talking with someone, my lip-reading skills are sufficient to ensure successful communication, but in a group, by the time I locate to the sound of a particular person talking or figure out from the body language of others who is speaking, the opportunity to read the speaker's lips has often passed.

It may seem unlikely and surprising to many readers that I would choose a career as a physician. Perhaps my hearing impairment is seen as something incompatible with the profession. My father is a physician, as are all of my paternal uncles. From their example, I knew that I wanted to be able to help others. My family unwaveringly supported me in each step of the process toward achieving this goal.

Providing interpreting services for my training was and continues to be expensive. I still use interpreting services now, during my residency, at the Oregon Health Sciences University, Portland. These services have been provided at no cost to me, largely because of the requirements of the Americans with Disabilities Act, which states, "the Nation's proper goals regarding individuals with disabilities are to assure equality of opportunity."[2] That statement is from the original bill; in more recent times, however, there has begun a general questioning of who qualifies for services under the law.

In our ever-changing climate of health care, costs, including accommodations for the disabled, are scrutinized. But is it truly cost-effective to deny someone reasonable accommodation based on cost alone? My answer would be that it depends on the person and the circumstances. We must think about the long-term "return on investment" when making this evaluation.

I am often asked to speak to groups of deaf children in elementary, middle, and high schools. Students have approached me after such talks to tell me that not only did they think it was impossible for deaf people to become doctors, but they were also unsure of their ability to secure a professional job in the future. Some students have told me that now they are willing to face the nay-sayers and to give it a try. I believe this is due, in part, to the fact that their expectations have been raised by exposure to someone who has successfully pursued a competitive profession. How much does it cost to raise expectations?

One particular boy stands out in my mind. He told me that he thought he might be relegated to factory work because he was deaf, but now he wanted to go to college. It is worthwhile to note that deaf people, because of their disability, qualify for Social Security Insurance benefits, as well as many other public assistance programs. How much money do we, as a society, save when one deaf person embarks on a career rather than receiving public benefits? I did not have the luxury of deaf role models, but I am determined to give that chance to other deaf children.

Under the public accommodation title of the Americans with Disabilities Act, physicians, hospitals, and medical offices are mandated to provide sign language interpreters to deaf consumers when it is required to ensure effective communication.[3] From educated guesses of people in the field of interpreter referral, it can be estimated that 1,500 hours

of medical interpreting services are provided per month in the Washington, DC, area alone (J Bailey, president of Sign Language Associates, Inc, Washington, DC, oral communication, July 1999). Would it be more cost-effective if a physician were able to communicate with deaf patients directly, even if it meant paying for interpreter services during that particular physician's training? Deaf people have told me alarming stories of repeatedly asking that an interpreter be provided at their doctor's office, only to have physicians turn down their request.

Physicians all owe an economic debt to the American public. Teaching hospitals are given substantial government funding for each resident trained. For the help in financing their education and training, physicians also owe a debt of gratitude. I have a deeply felt sense of duty and obligation because I am aware of the additional investment that was made on my behalf, and I am honored to share the outcome of that investment with my patients.

Economic issues aside, is it practical for patients to be seen by a deaf physician? Will the communication barrier compromise their quality of care? These are fair questions and should be addressed on an individual basis during the evaluation and screening process for admission to medical school.

Although I cannot answer for every person with a disability, I can answer for my own situation. I picked a specialty I felt was compatible with my disability. Dermatology is a visual field, and I am in my element when relying on visual information and available environmental cues. As for my level of patient care, as yet, I have received no complaints. Ironically, my patients tell me that they feel I truly "listen" to them. This is probably because I must look patients directly in the face while lipreading, and I attend to every word they say.

When I introduce myself to my patients, I explain my deafness and how we can communicate effectively. Patients, who are, by definition, vulnerable in some way, understand my vulnerability. Some patients feel that in their difficult times, it is easier to relate to a physician who is not "perfect."

The greatest opposition that I have faced has been from colleagues rather than patients. Some have told me outright that I would not be able to become a doctor, whereas others have openly expressed their desire to keep me in certain specialties so that my contact with the public will be diminished. None of these opinions suppressed my desire; rather, they have made me that much more determined.

I would want for each disabled person the opportunity that I had: to prove myself worthy, to be given the chance to measure up to the standards that others had to meet, and on meeting those standards, to be allowed to participate in life and society in the most fulfilling way possible. For me, this has meant being able to become a doctor.

I do not advocate the wholesale scrapping of standards to provide accommodation; however, the contribution of those standards to the process as a whole should be evaluated. I would not ask for accommodation so that I could be given training in, for example, piano tuning. Although this may be a possible achievement, it would be neither a prudent investment nor the best for people wanting their pianos tuned. Does every doctor have to be able to hear their patients to treat illnesses effectively? In my case, apparently not. But if I had to pay for the cost of accommodations myself, I may never have been able to complete my training.

Let people with disabilities figure out what they can do. Give them the chance to be pioneers, to guide their own futures. The UCLA medical school saw enough potential in me to give me that first chance, and Oregon Health Sciences University has built on that by accepting me into their residency program. I am eternally grateful to both institutions.

As a deaf woman, I am so thankful for the opportunities afforded me. I am aware of the sacrifice that others made that contributed to my success. If tomorrow someone offered me the ability to hear perfectly, but in exchange for my career, I would never accept. I am humbled and honored to be able to give of myself. In the words of Dag Hammarskjöld, I am finding "the humility that comes from others having faith in you."

At the time this was written, Dr Woolf was a third-year resident in dermatology at the Oregon Health Sciences University, Portland.

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West J Med 2000;172:278–279

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1 Rehabilitation Act, 29 USC §794 (1973).
2 Americans with Disabilities Act, 42 USC §122101 (1990).
3 ADA Accessibility Guidelines, §36.303, US Dept of Justice, Civil Rights Div, July 1994.

From "doctor" to physician

"If you could be anything you wanted to be, what would you be?" My father's query startled me. A year before, I had decided on a career in the Peace Corps and had dreamed of working long and harsh hours in remote lands with like-minded souls. I had just learned that Peace Corps stints (at that time) were of 2 years' duration, with one or two possible renewals. I had become morbidly depressed as only a 13-year-old can become at shattered dreams. Still, my response was quick, as if by instinct. "If I was a guy, I'd be a doctor. An orthopedic surgeon." If the reply surprised my father, he never let on. "So you're not a guy. So what?"

From that day on, I planned for a medical career. I would have all the bones in the body memorized before beginning college courses

in biology. Summer volunteer work and hospital employment only furthered my zeal. I graduated from high school in 3 years so as to get going on the goal I had set before me.

Thirty-two years after that brief conversation with my father, I am applying to medical schools. Despite my best-laid plans, bone memorization schedules, and unabashed enthusiasm, my academic life took a different direction. I became a "Dr," but one of philosophy. I received a PhD degree in the field of ancient Near Eastern history and culture, tackling, instead of bones, Sumerian and Akkadian, our first written languages dating from 3000 to 500 BC. Rather than tending to people's bodies, I worked with the intellect, teaching for 14 years as a university professor. For many years, I also taught night courses at the University of California at Los Angeles, where several of my students were physicians who eagerly read ancient history—stories written by Egyptians, Greeks, and Romans and the philosophical treatises of the Stoics. Many expressed their "envy" that I earned my keep by reading and writing. It was clear that these physicians yearned for an intellectual dimension their medical lives lacked, just as surely as I slowly sensed the absence of science in my own life. I never regretted my decision to become a scholar of ancient languages and history, but medicine continued to beckon me.

So it was, at age 43, I decided once again on a career in medicine. I had to start from scratch, teaching myself elementary algebra during my final semester of teaching at Reed College, Portland, Oregon, in preparation for the science program I had enrolled in. Finally, I was studying the college courses I had missed 25 years previously. A number of my classmates were former Reed students of mine. Students whose essays on the Old Testament, Homer, and Plato I had critically evaluated were now laboratory partners in physics and tutored me in organic chemistry. Science students tend to be more technicians than intellectuals, and I would notice that whenever my organic chemistry professor provided a brief historical excursion on a topic, pens suddenly ceased their furious note-taking. When studying for exams, I often heard comments like, "He just told us that stuff to give us a break." On those occasions, I was not always successful at holding my tongue. But I had the zeal of a convert. I needed it. To maintain the grades to remain a viable medical school applicant, I needed to call on all the mental reserves I could muster.

But had I simply romanticized medicine? I needed to find out, so I began a volunteer job in a cardiology wing at a sizable Portland hospital 3 days a week, apprehensive of what I would discover both there and within myself. To my surprise, within a few days, I felt completely at home. Many years of speaking with students and colleagues made conversing with patients and their families natural and easy.

Students whose essays on the Old Testament, Homer, and Plato I had critically valuated were now laboratory partners in physics

My volunteer coat, I found, signals my volunteer status only to nurses and physicians. Often when I have been assisting younger nurses, a distressed patient has turned to me, obviously seeking refuge in the "medic" with silver streaks in her hair, asking me if everything would be all right, or, in a couple of cases, if the nurse was doing the right thing. One of my greatest weaknesses, in fact, is to befriend patients. A cardiologist, a close friend of mine, has warned me about getting too involved with patients, knowing the difficulty such friendships might cause later on when my time is no longer my own.

I tend to think too much. But my life as a historian has made me sensitive to relations between people, and I have instinctively paused to observe how nurses, physicians, and residents react to each other and to patients. Physicians who have been on the ward for a long time often enjoy a warm relationship with staff. But I am amazed and occasionally appalled by the immaturity of some interns and residents. They show the same fear I remember so well of college students who desperately tried to appear at home in their new intellectual environment. In trying to shrug off their discomfort, they will assume a diffidence, an unconscious striving to look "cool" and "in charge"—even when it is neither called for nor possible. It has been painful at times to see the dismissive manner some residents display toward seasoned nurses and volunteers. I have often wondered if I am simply envious that such distressingly young looking men and women, some who could be my sons and daughters, have completed a medical education I covet. But I have also had the experience of a number of patients who, again not recognizing the volunteer jacket, have turned to me for an explanation—as if I could give one—of medical jargon an intern has just used in conversation with them.

I have been generally gratified by the warm reception by physicians, nurses, and staff if they know of my plans. One cardiologist, whose research project I had been asked to assist with and who had been told of my career change, exclaimed with a wide grin on meeting me, "I don't know whether to admire you or revile you!" The words were ambiguous, but the grin was obvious encouragement. Of course, it is easy to champion the underdog, but the sincere enthusiasm I have received augurs well.

I admit to envying my younger premed cohorts their stronger science backgrounds and, for many, their having grown up in an environment where science is bred in the bone. But, on the eve of several medical school interviews, I am confident that my years spent wrangling with ancient and arcane languages have brought many advantages. *Exempli gratia*, I already know that Latin bone terms are no obstacle.

Since writing this article, the author has been accepted to medical school and will begin her training in the coming academic year.

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Letter From the Southwest

Our just desserts

Mark Carroll, Flagstaff, AZ, mcarroll@infomagic.com

Suppose doctors weren't paid in dollars? The idea is not so preposterous. Patients in past eras have compensated doctors with chickens, clothing, furniture, and prayers. In exchange for conscientious health care, communities today might gift their physicians with cars, gasoline, homes, and heating oil. No bills would ever be mailed. No money would ever change hands. If a doctor or a doctor's family needed something, the community would provide it. Patients would care for doctors commensurate with how well doctors cared for patients.

Difficulties are easily identified. Doctors have staff to employ, educational debt to repay, and retirement equity to build. Who would pay for the medical equipment, the continuing training, and the malpractice insurance? Doctors would need guarantees that patients would value their services. What would happen if patients selfishly neglected doctors after doctors selflessly tended to patients? A thank you is all well and good. Saving for a child's college fund is something else entirely.

> Most doctors do not mean to be mammonists; we enter medicine with the loftiest of ideals

But consider the disproportionate state of what we presently call "health care." Business leaders, not doctors, decide who gets what care and how much. Insurance companies, not patients, choose which illnesses people can have (and which are statistically too expensive). Corporate executives, not communities, benefit from managed care profits. Greed, masquerading as efficiency and cost-effectiveness, abounds.

It is easy to blame others for the avarice in medicine. Doctors, however, must acknowledge their own roles. As people suffer, many physicians worry about profit margins and reimbursement. More and more doctors leave clinical medicine to become health maintenance organization gatekeepers, business administrators, or technology developers. Those who stay in practice claim to know what is best for patients. Yet, we overorder tests rather than observe symptom trends, and we overbook schedules rather than respect people's time. We even refuse to provide unreimbursed services, rather than do what we would only want done for ourselves.

Examples of doctors' selfishness are almost commonplace:

A doctor moonlighting for a managed care organization denies a request for out-of-plan specialty testing because a boy's ill-defined medical problem is potentially incurable. The doctor eventually approves the testing, not because the family is distraught, but because numerous confused hospitalizations would be more costly than "having a diagnosis."

A physician group decides to no longer attend cesarean section deliveries because insurance companies do not pay for time spent awaiting such deliveries. The group reconsiders its decision when local neonatologists threaten to assume care of all sick newborns, care that the physician group recognizes is well reimbursed by most insurance plans.

Most doctors do not mean to be mammonists; we enter medicine with the loftiest of ideals. Along the way, however, after countless sleepless nights and repeated harrowing clinical situations, we learn that the material world is an unjust place. Other people—who reliably sleep at night, spend time with families, and never once have to worry that choices they make help people live or die—these people make more money than we do, live in nicer homes, and build better stock portfolios. We come to want our fair share, to feel we deserve more than we have. But what do we really deserve?

> We do not deserve unwieldy education debt, but neither do we deserve unparalleled personal wealth

The incongruity between physician salary and patient suffering should give us pause. We no more deserve high salaries than sick people deserve diseases. What we deserve is less accountable, but more important: time to patiently listen, encouragement to be compassionate, and respect for the commitment we can make to people instead of reimbursement schedules. We do not deserve unwieldy educational debt, but neither do we deserve unparalleled personal wealth. We deserve the right to defend the intangibles, to live within and not outside of communities, and to help families balance life's joys with the inexplicable pain of its losses. Medicine is not—and should not become—a business. It is a calling, an opportunity to be different. Too many doctors mourn the loss of professional esteem without eschewing the selfish habits that have eroded that esteem. Much has already been lost by our myopic participation in market strategies and consumerism. What remains may depend on how honestly we reappraise our role and worth in healing, on how passionately we defend what is vital to people and their health, and on how freely we offer to forgo our fees.

In the end, dollarless care may be more than naïve idealism. When the dust settles from the political debate over power and policy in health care, the only solution to rising costs and waning compassion may be the simplest: take the profit out of medicine. Who among us is brave enough to place responsibility for our material well-being in the hands of patients? Why should patients trust us with their lives if we are unwilling to trust patients with our wallets?

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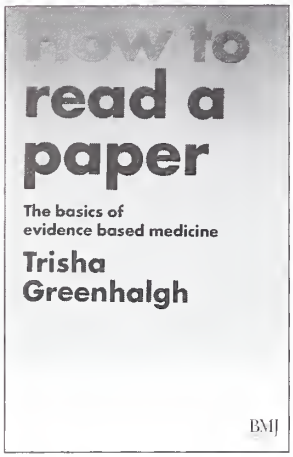

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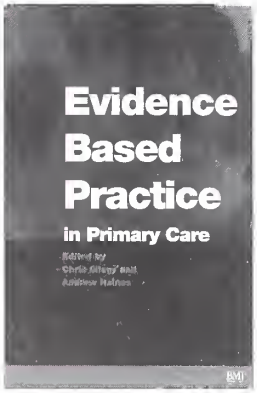

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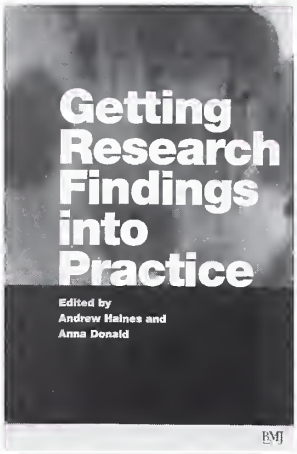

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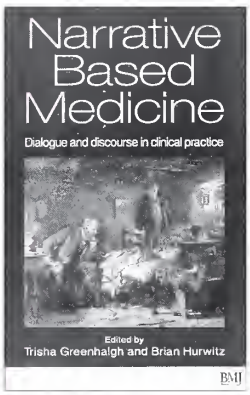

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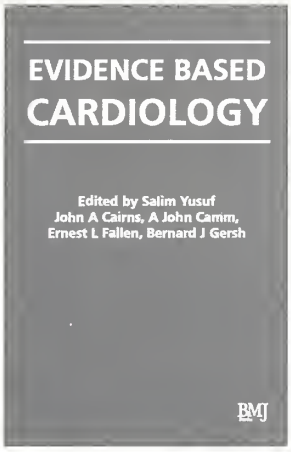

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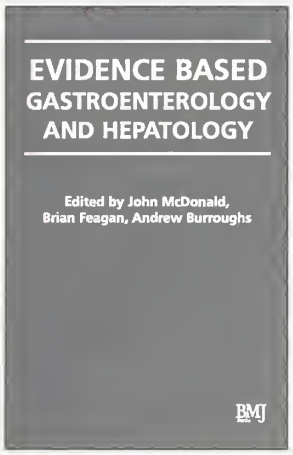

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All courses listed have been certified as meeting the criteria for Cat 1 of the ArMA CME Certificate and the AMA Physicians Recognition Award. To list Cat 1 CME programs, please send information to Arizona Medical Association, 810 West Bethany Home Road, Phoenix, AZ 85013; or phone (602) 246-8901.

OCTOBER 27-29, 2000: Clinical Endocrinology for Primary Care Physicains. Medical Education Resources at The Phoenician, Scottsdale, AZ. 11 hrs Cat 1. Contact MER (800) 421-3756; Fax (303) 798-5731; www.mer.org.

CALIFORNIA, HAWAII, AND NEVADA

All courses and meetings listed are approved for Cat 1 credit toward the CMA Certificate in CME. To list accredited courses here, please send information at least two months in advance to Paulette Richardson, Continuing Medical Education, California Medical Association, PO Box 7690, San Francisco 94120-7690; or phone (415) 882-3387. For more information on accreditation or certification, please write to the above address.

CARDIOLOGY

APRIL 22, 2000: Cardiology for the Primary Care Physician in the 21st Century. UC Davis Health System, Division of Cardiovascular Medicine and CME at UC Davis Medical Center, Cancer Center Auditorium, Sacramento, CA. Contact Office of CME (916) 734-5390; Fax (916) 734-8966.

JUNE 16-18, 2000: Coronary Heart Disease Update. Parc Fifty Five, San Francisco, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

JULY 23-26, 2000: 20th Annual Current Concepts in Primary Care Cardiology. UC Davis Health System at Northstar at Tahoe, Truckee, CA. 19 hrs Cat 1. Contact Office of CME (916) 734-5390; Fax (916) 734-8966; http://web.ucdmc.ucdavis.edu/edu.

EMERGENCY MEDICINE

MAY 4-5, 2000: Challenges in Pediatric Emergency Medicine. Center for Emergency Medical Education at Harrah's, Las Vegas, NV. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

MAY 15-16, 2000: High Risk Emergency Medicine. Center for Emergency Medical Education at Harrah's, Las Vegas, NV. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

MAY 17, 2000: ED Compliance 2000. Center for Emergency Medical Education at Harrah's, Las Vegas, NV. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

JUNE 1-2, 2000: Improving Emergency Department Patient Satisfaction and Reducing Length of Stay. Center for Emergency Medical Education at Harrah's, Las Vegas, NV. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

FAMILY PRACTICE/PRIMARY CARE

MAY 27-29, 2000: Pediatric Symposium. California Chapter, American Academy of Pediatrics at Monterey Conference Center, Monterey, CA. 13 hrs Cat 1. Contact California Chapter 1, (415) 459-4775; Fax (415) 459-0617; aapbev@aol.com.

JULY 2-7, 2000: Essentials of Women's Health: An Integrated Approach to Primary Care & Office Gynecology. UCSF at Hapuna Prince Hotel, Big Island, HI. 24 hrs Cat1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme.

JULY 7-9, 2000: San Diego Academy of Family Physicians' 44th Annual Postgraduate Symposium: Family Medicine Update 2000. SDAFP at Hotel del Coronado, San Diego, CA. Contact Terry Camarata (619) 422-1186; Fax (619) 476-1536.

JULY 10-13, 2000: Family Practice Board Review Course. UCSF at Fairmont Hotel, San Francisco, CA. 25 hrs Cat 1. Contact Julia K. Engleton, (415) 476-5250.

AUGUST 13-18, 2000: Essentials of Primary Care: A Core Curriculum for Practice in the Managed Care Era. UCSF at Squaw Creek, CA. 25 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme.

INFECTIOUS DISEASES

MAY 3-5, 2000: Advances in Infectious Diseases. UCSF at Hotel Nikko, San Francisco. 17.5 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme.

OB/GYN

APRIL 29, 2000: Obstetrics and Gynecology Spring Symposium. UC Davis Health System, Cancer Center Auditorium, Sacramento, CA. 7 hrs Cat 1. Contact CME UC Davis (916) 734-5390; Fax (916) 734-8966; web.ucdmc.ucdavis.edu/edu.

JUNE 20-24, 2000: Lactation Educator Training Program. UCLA Extension and Memorial Medical Center at Springfield, IL. Contact UCLA Extension (310) 825-8423; www.uclaextension.org/healthsci/lactate.htm.

JULY 20-22, 2000: The 28th Annual Seminar for Physicians on Breastfeeding. La Leche League International at Hilton Head Ocean Front Resort, Hilton Head Island, SC. Contact: Carol Kolar (847) 519-7730; Fax (847) 519-0035; ckolar@lli.org.

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CME listings can also be found on our website at www.ewjm.com/misc/CMEads.shtml

ONCOLOGY

JUNE 4, 2000: CTTR 108th Semi-Annual Cancer Seminar: Tumors of the Bladder and Male Genitourinary System. CTTR at Westin South Coast Plaza, Costa Mesa, CA. 10 hrs Cat 1. Contact CTTR, c/o Loma Linda University School of Medicine, (909) 558-4788; Fax (909) 558-0188; cttr@linline.com.

SURGERY

JUNE 14-17, 2000: 16th Annual San Diego Shoulder Arthroscopy/Arthroplasty Course. AAOS at Hyatt Regency, La Jolla, CA. Contact Rebecca Quiring (760) 940-2066.

JULY 28-30, 2000: Comprehensive Review Course in Hand Surgery 2000. American Society for Surgery of the Hand at Dallas, TX. 25 hrs Cat 1. Contact ASSH (847) 384-8300, Fax (847) 384-1435; Meetings@hand-surg.org

GENERAL/MULTIDISCIPLINARY

APRIL 28-30, 2000: Clinical Endocrinology for Primary Care Physicians. Hyatt at Fisherman's Wharf, San Francisco, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

MAY 4-6, 2000: Innovation in Generalism—Patient Care, Teaching, Research. Society of General Internal Medicine at Boston, MA. Precourses—up to 7 hrs Cat 1. Annual Meeting—up to 21.5 hrs Cat 1. Contact SGIM (202) 887-5150 or (800) 822-3060; Fax (202) 887-5405; www.sgim.org; info@sgim.org.

MAY 5-7, 2000: Dermatology for the Non-Dermatologist. Monte Carlo, Las Vegas, NV. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

MAY 9-11, 2000: 19th Annual Conference on Child Abuse adn Neglect. UC Davis Health System, et al. at Double Tree Hotel, Sacramento, CA. 16.5 hrs Cat 1. Contact CME UC Davis (916) 734-5390; Fax (916) 734-0188; web.ucdmc.ucdavis.edu/edu.

MAY 17-20, 2000: 21st Annual Scientific Sessions. North American Society of Pacing and Electrophysiology at Washington, DC. 27 hrs Cat 1. Contact NASPE (508) 647-0100; Fax (508) 647-0124; info@naspe.org; www.naspe.org.

MAY 22-26, 2000: Advances in Internal Medicine. UCSF at Cathedral Hill Hotel, San Francisco. 33.5 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme

MAY 25-27, 2000: 3rd Annual Current Issues in Anatomic Pathology—2000. University of California, San Francisco and Stanford University at The Mark Hopkins Inter-Continental, San Francisco, CA. 19.5 hrs Cat 1. Contact Office of CME (415) 476-5808; Fax (415) 502-1795.

JUNE 9-11, 2000: Issues in Women's Health. Medical Education Resources at Treasure Island, Las Vegas, NV. 11 hrs Cat 1. Contact MER (800) 421-3756; Fax (303) 798-5731; www.mer.org.

JUNE 12-16, 2000: Advances in Internal Medicine. UCSF at UCSF Parnassus Campus, Cole Hall. 33.5 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme

JUNE 18-22, 2000: Recent Advances in Venous Thrombosis, Pulmonary Embolism and Anticoagulation Therapy: From A to V Leiden. UC Davis at The Mauna Lani Bay Hotel, Kohala Coast, HI. 18 hrs Cat 1. Contact CME UC Davis (916) 734-5390; Fax (916) 734-0188.

JULY 9-18, 2000: World Alzheimer Congress 2000: With Change in Mind: Pivotal Research and Creative Care. Alzheimer's Association, Alzheimer's Disease International and Alzheimer Society of Canada in Washington, DC. Contact (312) 335-5813; Fax (312) 335-1110; alzheimer2000@alz.org; www.alzheimer2000.org.

JULY 21-23, 2000: Dermatology for the Non-Dermatologist. Tenaya Lodge, Yosemite, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

COLORADO

To list CME programs here, please send information at least two months in advance to: Mr Robert L. Kennedy, Denver Medical Society, 1850 Williams Street, Denver, CO 80218; or telephone (303) 377-1850. Brochures, course information, and registration forms are available from the contact person or organization.

MAY, 2000: 4th Management of Risk Factors for Cardiovascular Disease. Denver, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JUNE 26-JULY 1, 2000: 46th Family Practice Review. YMCA of the Rockies, Estes Park, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 9-12, 2000: 6th Biennial Management of Type I Diabetes. Marriott's Vail Mountain Resort, Vail, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 9-14, 2000: 36th Internal Medicine Program. YMCA of the Rockies, Estes Park, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 21-23, 2000: Genetics and Ethics. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 24-28, 2000: 27th Renal Disease Program. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 28-30, 2000: Neurology for the Non-Neurologist. Sheraton Tamarron Resort, Durango, CO. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

JULY 28-31, 2000: A Comprehensive Review of Movement Disorders for the Clinical Practitioner, 10th Annual Course. Columbian University College of Physicians and Surgeons at Hotel Jerome, Aspen, CO. Contact Columbia University College of Physicians and Surgeons, (212) 781-5990; Fax (212) 781-6047; cme@columbia.edu; http://cpmcnet.columbia.edu/dept.cme.

AUGUST 2-4, 2000: 26th Psychiatry Conference. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

NEW MEXICO

Information, requests for accreditation, and items to be listed should be sent to the chair of the CME Committee, New Mexico Medical Society, 7770 Jefferson, Suite 400, Albuquerque, NM87109, at least two months in advance. For information on CME accreditation or on the CME requirements of the New Mexico Board of Medical Examiners, please write to the above address or call (505) 828-0237.

APRIL 17-20, 2000: 12th Annual Southwest Regional Substance Abuse Conference: Harvesting Outcomes, Maximizing Results. Marriott Hotel, Albuquerque, NM. Contact NM Department of Health (505) 856-1717.

MAY 4-5, 2000: 12th Annual Multicultural Conference. UNM Continuing Education Conference Center, Albuquerque, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

MAY 5-6, 2000: Integrative Medicine and the Skin. La Posada de Santa Fe, Santa Fe, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

MAY 12, 2000: New Mexico Medical Society Annual Meeting—"Collective Bargaining—Is It For Me?" New Mexico Medical Society at Marshall Building. Contact New Mexico Medical Society (505) 828-0237.

MAY 25-28, 2000: Mammography in the Next Millennium: Screening and Beyond. La Fonda Hotel, Albuquerque, NM. Contact Ryals and Associates, Inc. (770) 641-9773.

JUNE 28-30, 2000: Santa Fe Summer Psychiatric Symposium. Hotel Loretto, Santa Fe, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

AUGUST 2-4, 2000: Current Concepts in General Surgery. Hilton Hotel, Albuquerque, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

WASHINGTON

The listing of continuing medical education programs in Washington state is compiled by the Washington State Medical Association. To list Cat 1 programs here, please send information at least two months in advance to Continuing Medical Education, Washington State Medical Association, 2033 Sixth Avenue, Suite 1100, Seattle, WA98121; or phone (206) 441-9762 or (800) 552-0612.

APRIL, 2000: Thoracic Surgery. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

APRIL 28, 2000: Diabetes Management. Seattle, WA. Contact Providence General Medical Center (425) 261-3690; Jsackett@Providence.org.

MAY, 2000: Alzheimers Update. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

MAY 18-20, 2000: 4th Annual Cardiac Prevention Conference. Whistler, BC. Contact Providence General Medical Center (425) 261-3690; Jsackett@Providence.org.

JUNE, 2000: Northwest Wilderness Medicine. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

JULY 23-25, 2000: World Class Breast Imaging: Mammography for a New Millenium. Waterfront Centre Hotel. Vancouver, BC. Contact Medical Education Resources (800) 421-3756.

WYOMING

All courses meet the criteria for Cat 1 of the Physician's Recognition Award of the AMA. To list AMA Category 1 CME courses here, send information at least two months in advance to the Medical Education Committee, Wyoming Medical Society, P.O. B ox 4009, Cheyenne, WY 82009; email skeefe@wyomed.org; phone 307 634-2424; Fax 307 632-1973.

AUGUST 4-6, 2000: Issues in Women's Health. Snow King Resort, Jackson Hole, WY. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

Thunderhead over Nambé, New Mexico

Ray Medina

Ray Medina is a landscape photographer from Santa Fe, New Mexico.

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This month in wjm

Harmful exposure to pesticides remains high

The link between pesticide exposure and ill health is well documented, with recent reports suggesting an association between exposure and childhood aggression. Use of these chemicals has been the focus of nationwide nonprofit groups and governmental agencies. Progress has been made: use of certain pesticides has been banned and efforts have been made to restrict the use of others. But as Thier (p 296) points out, serious health problems occur when humans are exposed to multiple agents. Restricting just a handful does little to address this cumulative risk. Americans need to promote ways to reduce exposure individually. Regional, national and global agencies should coordinate their actions to eliminate the health risks of these chemicals.

Doctors are overoptimistic in predicting survival of patients with cancer

Health care providers are often asked to predict the future for their patients. Christakis and Lamont had the doctors of 468 terminally ill patients estimate the survival of their patients and correlated these predictions with the actual survival and the patient and doctors' characteristics (p 310). They found that 63% of predictions were overoptimistic and 17% were overpessimistic. Doctors with the most experience were more accurate, but those who had the longest time to observe the patient were less accurate.

Answers to questions about patient care are rarely pursued by family physicians

When doctors have questions about the care of their patients, they rarely take an evidence-based approach to finding the answers. Ely et al (p 315) analyzed the questions and information seeking strategies of over 100 doctors. They found that doctors pursued answers to less than 50% of questions, spent less than 2 minutes doing so, and turned to textbooks and their colleagues as sources. In his commentary on p 319, Gorman says strategies to improve information support are key, and he challenges researchers in medical informatics to study how physicians seek information and work to facilitate effective communication.

Growth of national wealth does not ensure a healthy population

The United States is one of the richest nations in the world but ranks behind other countries—wealthy and not—in the health of its population. As Bezruchka explains on p 332, the greater the economic hierarchy in a nation, the less healthy are its citizens, and the United States has the greatest wealth and income gap of any wealthy country. Corporate-centered trade—dubbed globalization—increases that gap, warns Bezruchka, and only making a healthy population a goal and making structural changes in the distribution of income and wealth will bring a turnabout.

Editor's Pick

Ours is a society with a growing number of immigrants who come to us from all over the globe. This cultural mixing brings numerous advantages, but we now encounter new diseases as well as some conditions that were nearly forgotten. Torture and other violations of human rights are not new and affect countless numbers in many regions of the world. What is new is the rapid dissemination of reports of torture directly to our televisions and computers. Most physicians see the almost daily news reports of killings, rapes, and beatings, but few have had personal contact with victims of such torture—at least that we know about.

It is estimated that 400,000 victims of torture now reside in the US – many in the Western States. Testing the hypothesis that victims of torture can be found among our urban patient population, Eisenman et al (p 301) showed that 7% of patients in their survey who were born outside the US reported a history of torture, but none of these patients were identified by their physicians as survivors of torture. Doctors need to be more alert to detecting and documenting torture, as well as providing compassionate care.

For most victims of torture, visible scars pale by comparison with emotional and psychological scars. Therefore, a lesson to learn from this study is the importance of asking patients about their lives before they came to the US—where they resided, if they have ever been physically or emotionally abused, or if anyone ever hurt them or people they care about. Like our approach to suicide, depression, and rape, there is little to suggest that broaching these topics will result in any harm and much to suggest that there are great benefits to the patient.

Perhaps the broader lesson is the importance of understanding the cultural backgrounds of our patients. On p 335, Geri-Ann Galanti introduces a new series that will explore differences between cultures with respect to medical practice and care. Galanti says her task is to inform without stereotyping. Stereotyping, she emphasizes, is an ending point. The goal is to provide a starting point to better understand our patients and how to care for them.

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Op-Ed

Health legislation in 2000

Making changes that benefit public health will not be easy

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West J Med
2000;172:292–293

During the year 2000, the last year of the 106th Congress, many critical health care issues face the nation. As we begin the second session of this Congress, the likelihood that this year will be a significant one in the health care of the nation is slim. The smart money is on lots of talk but little real action.

Topping the list of action points, of course, is securing health care coverage for the 44 million uninsured Americans. Every year that we fail to act, the problem gets worse. Given that the number of uninsured is continuing to grow at a time when the economy is booming, we can only wonder what we would be facing if this country were in a recession. The good news is that the issue is increasingly being discussed, and a lot of people with different political points of view are urging action. The bad news is that we are no closer to a consensus on how to address this problem than we were when the Clinton health care proposal failed to be enacted.

One approach that is getting a lot of attention involves systems of supporting coverage based on tax credit. The reasons for this approach's appeal vary. Some believe the system based on employers providing coverage is eroding and that a system based on individual tax credit is a way to replace it. Some like the fact that it provides greater portability of benefits, an important factor in the current economy. Some seek greater equity of tax treatment for those who buy their own coverage with those whose coverage is provided by employers. Some believe that, in effect, giving people a voucher through tax credits will mean less interference in the delivery of medicine.

The more this approach is examined, however, the more difficult issues will surface. First, it cannot effectively reduce the number of uninsured without being accompanied by extensive reforms of the insurance market, including for individual purchasers. Yet, many who find the tax-credit approach most attractive may be the least interested in addressing those reforms. Second, the complications of addressing different costs in different areas of the country, and of making it workable for people on low and moderate incomes, may be formidable. Finally, it clearly will cost a lot of money. We can't spend it unless we are willing to raise it—which no one thinks would be easy. Certainly, lots of hearings will be held on this issue, and lots of rhetoric will flow, but the likelihood of action is slim.

The second issue, of course, is to enact a strong and meaningful patient bill of rights. We need to bring balance back into the relationship between insurers and managed care organizations and patients and providers. The House passed the bill we need when it approved the Norwood-Dingell bill in the fall. It returns medical decisions to doctors and their patients, establishes strong and enforceable internal and external review procedures based on medical necessity, and lets states make insurance plans liable for their decisions. But the refusal of the House leadership to include supporters of the patient bill of rights on the conference committee, and the strong opposition by Senate Republicans, will make it difficult to secure a good product out of the conference.

A third issue that will be front and center in the Congress will be protecting the privacy of medical records. An important step forward has been taken with the publication of proposed regulations by the Secretary of the US Department of Health and Human Services that should serve as a benchmark for judging any further legislative efforts. But the authority of the Secretary is limited in several key areas: reaching beyond electronic records, assuring a private right of action so that a person has an effective and available means of enforcement, and being able to protect medical records in all settings are a few areas that will not be effectively addressed without legislative action.

The final major issue that will clearly engage this Congress is ensuring access for the elderly to prescription drugs. Leaving the Medicare population—the heaviest users of prescription drugs—without coverage of this critical benefit is untenable. Prescription drugs are a critical element of modern medical care. The situation is worsened by the fact that the elderly consistently pay the highest prices for drugs—frequently twice as much, or even more, than favored purchasers—because they are individual purchasers in the market, without the bargaining power of large HMOs or the government.

There are other important issues as well. Discussions will surely begin on more major reforms of Medicare, although we are not close to consensus in this country about how to prepare for the influx of baby boomers into this program. Unfortunately, there will probably be efforts to stop federal support of stem cell research, which would be a tragedy. This area of research holds the promise of cures for diseases like Parkinson's. To close the door on this promise because of abortion politics would be unconscionable.

We will settle the national debate on organ distribution policy and, hopefully, decide that the system must have public accountability and direction. Tobacco control activities and reduction in youth smoking will be an issue as long as I am in Congress. We all await the decision of the Supreme Court on the Food and Drug Administration (FDA)'s jurisdiction over tobacco. The case for the FDA is strong, and regulation by the agency is critical to anti-smoking efforts. Whichever way the case is decided, a reaction in the Congress is likely.

There are many critical issues. And while the political climate might make it hard to achieve action that will benefit the public health, many members of Congress are determined to try.

A call for papers on physician well-being

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Managed care, advances in medical technology, higher public expectations for health, and political debates about the equitable distribution of health care resources are all placing new demands on physicians. The pressures to achieve better outcomes in health care, contain costs, maintain productivity, master an expanding knowledge base, and relate to patients with compassion and presence tax the ability of many physicians to cope. Their risk of job dissatisfaction, burn-out, family problems, and more serious impairment is enormous.[1-3]

The challenges of this era are superimposed on the personal vulnerabilities of physicians.[4] The qualities that allow physicians to succeed in training and practice are often maladaptive in their personal lives. Many physicians have a compulsive style that is reinforced in their training and leads to chronic doubt, guilt, and an excessive sense of responsibility accompanied by the feeling that "my work is never done."[5,6] Sir William Osler addressed this occupational hazard in a talk to medical students in 1899: "Engrossed late and soon in professional cares—you may so lay waste that you may find, too late, with hearts given way, that there is no place in your habit-stricken souls for those gentler influences which make life worth living."[7]

In the face of these challenges, more physicians are seeking ways to uphold the ideals that brought them into medicine while balancing their other interests and values. The search for this balance is a lifelong challenge, from medical school to retirement.[8]

Health care institutions are developing a strong interest in physicians' well-being. Managed care organizations are beginning to see a relationship between physicians and patient, or customer, satisfaction and are more willing to attend to the well-being of physicians. Group practices spend about $150,000 on average to replace a physician who leaves the practice due to professional dissatisfaction. More practices are looking for specific ways to enhance the well-being of their physicians, such as reviewing the incentives for work. Malpractice insurers view professional burn-out as increased risk, and disability insurance companies are concerned about the increase in disability claims being filed by physicians, a trend that may reflect an erosion of professional well-being and satisfaction. Promoting satisfaction and well-being among health care professionals not only enhances the work environment but is good for the financial health of the corporation. In this respect, medicine as a business is beginning to emulate the success of other businesses that are worker friendly.[9]

The *Western Journal of Medicine* is devoting an entire issue to the subject of physician well-being. We are interested in articles that address the components of personal well-being, the organizational and workplace factors that promote or erode well-being, specific practices that physicians use to promote their well-being and satisfaction, the political dimensions of physician well-being, and cultural factors (inside and outside of medicine) that affect physicians' wellness. We are looking for Op-Eds, original research, letters, review articles, and personal stories or essays. Topics of special interest include:

- Well-being throughout the physician's life cycle
- The well-being of physicians' relationships and families
- Personal practices that promote well-being
- Well-being in the workplace
- Gender issues in physician well-being
- The role of personal philosophy and spirituality in well-being
- Descriptions of specific programs that promote physicians' well-being
- Training physicians to lead healthy lives
- Political action to promote physicians' well-being
- Models of excellence (both personal and organizational) in which well-being is manifest
- Research into the factors that lead to happy, satisfied physicians

In addition to scholarly pieces, we also welcome artistic expressions related to physicians' well-being, including poems, photographs, and cartoons.

All manuscripts submitted to *wjm* will go through a peer review process. The deadline for submission is August 1, 2000.

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News and Features

Imitating Mickey Mouse can be dangerous

Deborah Josefson, New York

Inhaling helium to produce that amusing squeaky voice may not be the innocuous party trick it seems, according to emergency medicine physicians at the Wesley Center for Hyperbaric Medicine in Brisbane, Australia (*Ann Emerg Med* 2000;35:300-303).

Simon Mitchell and colleagues report the case of a previously healthy 27-year-old man who inhaled helium and subsequently developed a stroke with transient blindness and radiographic evidence of cortical infarction. The man had inhaled the gas directly from a pressurized canister; most children who perform the trick—to imitate the voice of Mickey Mouse—inhale the gas from helium-filled balloons.

The patient developed rigidity and lost consciousness within moments of inhaling the helium. On arrival at the emergency room 15 minutes later, he regained consciousness but was found to have complete visual loss and evidence of cortical infarction.

The patient was diagnosed with a cerebral arterial gas embolism occurring after inhaling helium; he was treated with hyperbaric oxygen. His blindness resolved, and there was radiographic evidence of regression of his stroke after four cycles of treatment with hyperbaric oxygen.

The patient in this report had inhaled helium from a high pressure cylinder, causing blood vessels in his lungs to rupture and allowing the gas to gain access to the pulmonary vasculature and subsequently to his brain. Before inhaling helium, the patient had consumed alcohol, smoked marijuana, and taken an amphetamine. These factors may have lowered his threshold for the stroke but did not cause it.

This is the second reported case of stroke occurring after helium inhalation. The first occurred in a 13-year-old boy and showed that even a single breath of helium can lead, albeit rarely, to stroke.

Maya Avidon/AFP

Helium: safe in balloons but not in lungs?

US launches new clinical trials database

Fred Charatan, Florida

The US National Institutes of Health and the Food and Drug Administration have jointly set up a database of all US clinical trials for serious illnesses.

The action is a result of the Food and Drug Modernization Act of 1997, which required the Department of Health and Human Services to establish a registry of the clinical trials being conducted for both the governmental and private sectors.

"This is the single place you can go where the most important information, we hope, will be available to everybody," said Donald Lindberg of the National Library of Medicine, the largest medical library in the world, which is running the registry.

The website contains information on about 4000 studies being conducted at 47,000 sites nationwide, most of which are sponsored by the National Institutes of Health or universities. More studies, particularly trials run by drug companies, will likely be added.

Access to the new registry is free (http://clinicaltrials.gov), and the registry will be regularly updated. An introductory statement reads: "This federally sponsored database is designed to be the most comprehensive central listing of clinical studies sponsored by the National Institutes of Health, other federal agencies, the pharmaceutical industry and non-profit organizations. Users are not asked to provide personal information, nor will they be sent unsolicited material."

A free phone number for the database is planned for 2001. The website also provides information for people considering participating in a trial. It has a list of 20 frequently asked questions and answers, including: what is a clinical trial; what is a protocol; what is informed consent; what is a control or control group; what protections are there for participants?

The website also contains information on understanding clinical trials from a patient's perspective, by Patty Delaney, a 10-year survivor of Hodgkin's disease and a member of the Food and Drug Administration's cancer liaison program in the Office of Special Health Issues.

Rise in preschool children receiving psychiatric drugs

Scott Gottlieb, New York

The number of preschool children in the United States receiving methylphenidate (Ritalin), fluoxetine (Prozac), and other drugs for psychiatric disorders increased dramatically from 1991 to 1995, according to a new study. In the study, researchers reviewed outpatient prescription records from two state Medicaid programs and one health maintenance organization.

The investigators analyzed these groups for the years 1991, 1993, and 1995. During the study period, they found that the number of antidepressant prescriptions doubled in both of the Medicaid groups and increased in the health maintenance organization's group too.

Ritalin was by far the most prescribed psychotropic drug, with prescriptions among children aged 2 to 4 years increasing substantially in all three study groups and tripling in two of them (*JAMA* 2000;283:1025-1030).

The use of clonidine, a blood pressure drug gaining popularity as a treatment for insomnia associated with attention disorders, also increased. The researchers said that, although clonidine was prescribed less frequently than stimulant drugs, its increased use was notable because no rigorous studies had shown its safety or effectiveness as a treatment.

The study found that 2.3 children per 1000 in the Midwestern Medicaid group received prescriptions for the drug in 1995, compared with 0.1 child per 1000 in 1991.

Among antidepressants, the older generation of tricyclic drugs remained the most commonly prescribed, although the number of children receiving newer antidepressants—such as fluoxetine and sertraline hydrochloride (Zoloft)—increased dramatically in the Medicaid programs over the 5 years. In the Midwestern Medicaid group, 3.2 per 1000 preschool children received prescriptions for antidepressants.

"Rapid expansion of medication use for a particular problem raises questions about appropriateness, effectiveness, and long term safety," said Magno Zito, associate professor of pharmacy and medicine at the University of Maryland and lead author of the study.

Several factors that may have contributed to the trend, Zito said, include a change in the criteria for diagnosing attention deficit hyperactivity disorder; a bigger role for schools in assessing children's emotional and behavioral needs; day care environments that may interfere with children's normal behavioral development; and a more favorable public attitude toward medical treatment of behavioral problems.

Although researchers have known for some time that such drugs are increasingly being prescribed for older children, the study is the first to document an increase among younger children.

Netphiles

We welcome suggestions for Web sites to be included in future Netphiles

How to find out about tropical medicine

Our understanding of tropical infections might have improved, but drug and vaccine development has been disappointing: the tsetse fly is a durable opponent, and Gambian sleeping sickness has risen sharply. African spending on health care is low, and public health measures are inadequate. Where to turn for help? The West, of course, or the web, which amounts to the same thing.

The American Society of Tropical Medicine and Hygiene (www.astmh.org/), the Tulane School of Public Health and Tropical Medicine (www.tropmed.tulane.edu/), and the Royal Society of Tropical Medicine and Hygiene in the United Kingdom (www.rstmh.org/) all are prominent web players. The Liverpool School of Tropical Medicine and Hygiene, also in the United Kingdom, links to the Cochrane Infectious Diseases Review Group, and a practical section on treatment focuses on effective health care in developing countries (www.liv.ac.uk/lstm/ihd98-ehc.html#eu). For a rousing tour, however, the American Society of Tropical Medicine and Hygiene is hard to beat. Follow its clinical site links to the World Health Organization's guide to vaccination requirements and health advice (www.who.int/ith/english/index.htm), as well as the CIA's "World factbook." As for an African perspective, forget it. Thailand is as tropical as the web gets (www.mahidol.ac.th/mahidol/tm/h-tromed.htm).

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Media Watch

How scared should we be of pesticides?

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News stories about the health risks of pesticides seem to be increasingly common and alarming. Associated Press reported that in spring 1998, 123 people in Florida were hospitalized with headache, nausea, and dizziness after being exposed to malathion, the chemical most commonly used to combat the Mediterranean fruit fly, during a local spraying.[1] In early 1999, a small elementary school in Santa Barbara County, California, was evacuated and closed when 5 school employees and 17 students were hospitalized after being exposed to airborne pesticides from nearby agricultural fields.[2] Another recent story tells of how pesticides on a school breakfast killed 24 children in Peru.[3]

Many pesticides, such as dichlorodiphenyltrichloroethane (DDT), have been banned for various health and ecologic reasons. Others still in use have been shown to cause acute and chronic health problems among wildlife, farmers, and consumers. Are the media exaggerating the dangers of pesticides, or is the government being slow to react to this danger to our health?

Pesticide exposure has been linked to an increase in aggressive behavior, particularly in children

For years, studies have shown that pesticides can damage the reproductive and neurologic development of animals. However, many of the health effects on humans are only now being reported as new data from human research are collected. Recently, studies have associated pesticide exposure with an increased risk of developing breast cancer.[4] In addition, pesticide exposure has been linked to an increase in aggressive behavior, particularly in children.[5,6]

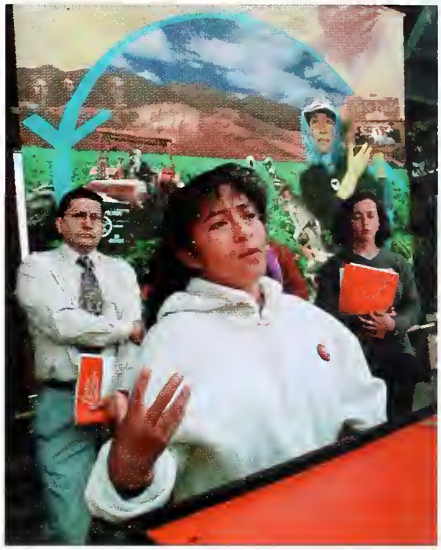
WHAT HAS THE GOVERNMENT DONE SO FAR?

Congress took a big step toward controlling the use of pesticides by signing the Food Quality Protection Act (FQPA) in 1996.[7] This law requires the Environmental Protection Agency (EPA) to reassess all pesticide tolerance levels, the allowable residues of a given pesticide in different foods, by August 2006. The EPA was given 3 years to reassess the one third of all pesticides that are of most concern to health. These chemicals include a selection of endocrine disrupters and potential carcinogens that could be particularly harmful to children. Organophosphates are one group that is widely used as an insecticide on food and has many other structural, landscape, and garden uses.

When the first 3-year deadline arrived on August 3, 1999, the EPA had taken only limited action on 2 of more than 40 organophosphates, announcing that the use of methyl parathion and azinophos methyl was being restricted. Children's foods, such as fruits and most vegetables, were not to be sprayed with these 2 chemicals, but their use on other foods, including wheat, could continue. The EPA claims that it actually exceeded their reassessment requirements for the first deadline, examining more than a third of pesticides. However, many of the pesticides reviewed had already been banned or are no longer used, disregarding the FQPA's "worst-first provision" requiring the EPA to examine the most dangerous chemicals first.

ASSESSING TOLERANCE

Before the FQPA was enacted, limited regulations already existed on pesticide use and tolerance assessment, particularly in relation to children, who are more vulnerable to the toxic effects of pesticides. In the past, tolerance levels were established by spraying a plot of land with a particular pesticide, harvesting the crops, and determining the residue levels: the level found was often set as the tolerance level. These levels often exceeded (sometimes by 10,000 times) the tolerance levels established through methods based on health research. Reassessing tolerance levels for pesticides is complex. Reference doses are ascertained by reviewing reliable animal studies and identifying the lowest level of the chemical that leads to an adverse health effect. For a noncarcinogen, the reference dose is then reduced as much as 20-fold to reflect animal-to-human transference and often another 10-fold to reflect the difference between adults and children.



Paul Sakuma/AP

California strawberry worker Isabel Rendon tells how farmworkers face risks from pesticide poisoning

The EPA has made efforts to restrict the use of 2 of the most potent pesticides but has not addressed cumulative risk. Organophosphates do not act singularly, and exposure is

usually to more than one at a time. According to Gina Solomon (oral communication, October 1999), senior scientist at the San Francisco office of the National Resource Defense Council,

"Cumulative exposure to common-action pesticides can be thought of as a risk cup. The rim of the cup is the reference dose, and the contents are the sum of amounts from various exposures, whether it is through residue on food, household use, or from spraying at schools or parks. If the amount someone is exposed to, especially children, seeps over the rim, that is when serious health problems, even death, can occur."

FINDING ALTERNATIVES

Reducing exposure to pesticides begins at the individual level. Purchasing organically grown produce and reducing or eliminating the use of pesticides in the home and garden will minimize personal levels of exposure. The use of boric acid and caulking can reduce infestation problems. Children should be taught to wash and peel fruit and vegetables.

Regionally, groups such as Californians for Pesticide Reform (http://www.igc.org/cpr), Pesticide Action Network (http://www.panna.org/panna), Pesticide Watch (http://www.pesticidewatch.org), and Washington Toxics Coalition (http://www.watoxics.org/index.html) have been working with local and national government agencies to influence change. Nationwide nonprofit organizations with information on pesticides and alternatives and government agencies include the Environmental Working Group (http://www.ewg.org) the Environmental Protection Agency's Office of Pesticide Programs (http://www.epa.gov/pesticides), and the Northwest Coalition for Alternatives to Pesticides (http://www.pesticide.org/other.html).

The Los Angeles Unified School District and the City of San Francisco have developed integrated pest management plans to reduce and eliminate many toxic pesticides. These initiatives have also stressed the importance of education for people who handle pesticides and for guidance in nontoxic forms of pest control.

Other countries have also been reassessing tolerance levels. Nearly two thirds of the imported produce that is tested has lower residue levels than that grown in America.[8,9] Although the United States has banned the use of DDT, the chemical continues to be used in developing nations as an agricultural fumigant and in the fight against malaria-causing insects.[10] Continued evidence of the harmful health effects of DDT, such as adverse effects on neurologic development and suppression of the immune system, has led the World Wildlife Fund to push for a global ban on the production and use of DDT by 2007.

> Nearly two thirds of the imported produce that is tested has lower residue levels than that grown in America

Efforts are being made worldwide to adopt integrated pest management plans. These plans combine nonchemical tactics, including environmental management techniques (for example, eliminating standing waters, which harbor vector larvae), biological control (for example, distributing fish or other predators that eat mosquito larvae, or applying natural bacterial pathogens to mosquito breeding sites), with limited application of insecticides (DDT or other chemicals).[11] It is only through these international efforts that we will be able to eliminate the health risks of pesticides.

> Children should be taught to wash and peel fruits and vegetables

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capsule

Spinal cord injury can unite a family One of several questions left unanswered in the film "Cider House Rules" is the outcome of a relationship in which the man becomes paraplegic. Studies have tended to focus on whether there is an increase in divorce rates after spinal cord injury. But one Swedish reviewer points out that most women felt that their partner's injury had resulted in some positive changes: the family had become closer and the injured partner spent more time with the children (*Spinal Cord* 2000;38:2-6)

Med. Pix

An unusual pattern of bruising

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QUESTION: A 17-year-old Vietnamese boy being admitted to a juvenile detection facility had linear, bruise-like lesions on his back. The possibility that he was a victim of child abuse was suspected after he claimed to have no knowledge of the cause of the bruising. Are there any other explanations for these marks?

ANSWER: The patient had symmetric linear groupings of petechiae on his back but at no other site. Initially, he claimed to have no idea about their cause. When the practice of coining (rubbing the skin firmly with the edge of a coin) was described to him, he admitted that his mother had engaged in coining him about 4 days previously. She had attempted to improve his breathing, using a method that is common in her country of origin, when she found him unconscious after an episode of illicit drug use. The young man was reluctant to discuss this incident because he was embarrassed by his mother's use of a technique that he considered archaic and un-American.

The petechiae resolved 4 days later. This episode was used to discuss with the patient his mother's concerns regarding his drug use. He was able to talk about the dangers of drug misuse in the context of the life-threatening event he had experienced.

The symmetric, linear pattern of petechiae on the back is classic for coining. Bruises caused by inflicted trauma would usually be randomly distributed and often would involve more than one part of the body. Therefore, if the examiner is sure the lesions are petechiae, the next question to ask is what could have caused such carefully placed lesions. The clinician might also inquire as to why or how these marks came to be placed on the patient's back.

There are several differential diagnostic possibilities to consider in this case. Petechiae can be seen in various bleeding disorders involving low or abnormal platelet numbers. Bruising or purpura can also be seen in many different coagulopathies. In all of these bleeding disorders, the petechiae or bruising should be seen in other areas in addition to the back.

Other skin conditions are found on the back, but these are not predominantly petechial in their presentation. Pityriasis rosea consists of round and oval patches of salmon-colored lesions with a peripheral ring of scale. The patches follow the skin lines of the back and are aligned in diagonal rows like Christmas tree branches. Although somewhat symmetric, the lesions are not uniformly spaced. Occasionally the condition is intensely pruritic, and the patient may make many scratches that could resemble coining, although these excoriations don't generally look like the lines of petechiae characteristic of coining. Secondary syphilis can also mimic pityriasis rosea with quite dramatic papulosquamous lesions. All sexually active teenagers with these lesions should be tested for syphilis.

Lastly, phytophotodermatitis is caused by an interaction of a photosensitizing chemical and ultraviolet light. This disorder results in gray-brown staining of the skin, which sometimes is mistaken for bruising. The affected areas may take the appearance of a hand (if a hand, with lime juice on it, touches the child and transferred the juice to the skin of the child) or there can be driplike marks caused by the juice dripping down the patient's body. Usually the lesions are not regularly spaced and there is a history of exposure to the chemical, which is found in many citrus fruits. Although there are many causes of bruising in children, none of them appear as uniform as in association with coining.

Mail

A rebuttal to criticism of the Oregon Death with Dignity Act

To the Editor,

Wesley J Smith, an attorney with the International Anti-Euthanasia Task Force, condemns the care provided to the first recipient of physician-assisted suicide under the Oregon Death with Dignity Act.[1,2]

I was the physician who monitored the patient's care. Mr Smith states that I described the patient as merely "frustrated." I made careful notes at the time of my involvement with the patient. I had 4 prolonged telephone conversations with her, her 2 children, and a granddaughter. She had repeatedly asked her primary physician to help her die. This physician referred her to another physician, who thought that she was depressed. None of the other 4 physicians who saw the patient during the terminal phase of her illness believed that she was depressed. Her primary physician specifically noted at the time of her last visit that he believed her to be competent.

When the second physician refused to help her, she felt powerless and desperate. The patient told me that she could no longer exercise, that her symptoms of breathlessness and paroxysmal cough were rapidly getting worse, and that she was afraid that she would soon be too sick to make a competent request. Her daughter said that her mother could spend only 10 minutes gardening, her favorite recreation, before becoming exhausted.

I had telephone conversations with her second physician after each of the 2 visits the patient had with him. An x-ray film he had ordered at the time of the second consultation showed tumor infiltrates in both lungs. The physician who eventually provided her with the lethal prescription referred her to a psychiatrist, even though he thought that she was fully competent, and to an independent pulmonologist to confirm that she was terminally ill, competent, and acting voluntarily. He visited her at her home, consulted with her children, and was with her and her family when she took the prescription and died peacefully. This care Mr Smith labels as "pure Kevorkianism."

Joanne Lynn's commentary raises equally controversial points about physician-assisted suicide.[3] Far from being a barrier to reform, debate during and after the campaigns that legalized physician-assisted suicide in Oregon was followed by measurable improvements in the care of the dying. Many hospitals and health care agencies made organizational changes to cater to dying patients' needs. There has been a large increase in the percentage of terminally ill patients dying at home. Oregon now has Hospice caring for proportionally more of these patients than any other state, except Arizona (A Jackson, Oregon Hospice, oral communication, March 2000).

Lynn suggests that if the option were widely available, it would become "ordinary." To the contrary, all of the physicians whom I know to have helped patients die have been deeply moved by the experience and deeply involved with their patients.

The answer to Dr Lynn's question about why physicians should be involved in assisting patients to die is that they need our skills. Dying patients do not ask for "the mantra of acceptability granted by 'the white coat.'" We physicians delude ourselves if we believe that we "grant" acceptability. That is a verdict for the larger society.

Dr Lynn worries that the poor and the socially deprived will be forced by circumstances to "choose" assisted suicide. This has not been the experience in Oregon. Physician-assisted suicide is to a great extent a privilege, exercised by patients who feel powerful enough to make their voices heard. Unfortunately, in our society the poor, the disabled, and the chronically ill seldom see themselves as having the power to significantly affect the thinking of their physicians.

Dr Lynn refers to my "strange" use of the term "starve to death." Her opinion that the time to dying of the patient was probably unaffected by the patient's decision to starve

to death is irrelevant. She gives the impression that the decision was inconsequential. The patient understood what was meant, and his decision to starve to death gave him the control that eased his dying days.

We all agree that care of the dying should be improved. Dr Lynn maintains that discussion of physician-assisted dying only diverts attention from that goal but provides no evidence to support that claim. The public dissatisfaction with terminal care, and the clamor that arose as a result, including widespread support for aid in dying or physician-assisted suicide, has goaded the medical profession to address the deficiencies in care of the terminally ill. I agree that physician-assisted suicide is not the most important issue concerning us, but it has encouraged us to confront those more important issues.

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Should doctors strike?

To the Editor,
In her editorial,[1] Dr Susan Adelman states, "Physicians for Responsible Negotiations will be heard." I doubt that managed care or anyone else will be listening.

Physicians for Responsible Negotiations (PRN) came out of the American Medical Association (AMA), an organization whose membership totals less than one third of all physicians. They purport to represent employed physicians, but before 1989 had viewed employed physicians as pariahs not worthy of recognition. My appeal to the AMA for help in 1994 when I was fired from [my employment with] a health maintenance organization (one with which Adelman is familiar) for opposing a destructive chief executive officer fell on deaf ears.

By deciding not to strike, PRN has sacrificed any leverage it may have had and will be little more than a paper tiger. The obvious solution, a "strike" against all managed care companies, would cripple the industry, but I know few physicians who have the courage to confront their tormentors directly. More likely, we might see a gradual shift to a free-market health care system. But who is willing to take their hands out of the cookie jar?

I abandoned full-time practice in 1997, at age 42, having become totally disgusted with the health care system. I now work part time as a locum tenens physician, which allows me to do what I enjoy most, take care of patients. You couldn't pay me enough to return to being some bureaucrat's minion.

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Author's response

I am truly sorry to read about the problems Dr Rivera had. I do not know which HMO it was, what his interaction was with the AMA, or what the story was. I do know that the labor laws allow collective negotiations with employers, not directly with managed care organizations (insurers), unless they are employers. That is the group of physicians we can assist, employed physicians and now residents because the National Labor Relations Board has ruled them to be employees.

Even labor leaders in traditional unions say, and are writing, that the strike weapon is rapidly becoming uncommon. They say that strikes only alienate the public, and they do not work well. Rather, putting the deficiencies of the institution with which we (PRN) are negotiating on the front page of the local newspaper, which likely causes the institution to lose managed care contracts, is powerful pressure.

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Man of the century

To the Editor,
In June 1997, the journal devoted an entire issue to assisted suicide and euthanasia. In the November-December 1999 issue, Drs Rodriguez and Gorovitz[1] imply that guns have no acceptable uses, so the civilian population should be disarmed. Drs Caplan, McGee, and Magnus[2] ask, "What is immoral about eugenics?" and conclude that the pursuit of "perfection" is permissible if coercion is absent. How to guarantee its absence is not stated. In short, the authors, and presumably the editors, believe it is both ethical and safe to construct a society in which the elite are free to pursue their notions of perfection—and, by extension, their desires on what to do with imperfection—on a helpless populace. I would be fascinated to learn my uncle's opinion of these developments, but I cannot do so; he died in the Lodz Ghetto during the Holocaust.

The mere fact that the Nazis did something does not mean we must avoid it. Hitler detested smoking, was a vegetarian, and drank little alcohol; this does not mean I should smoke a pack of cigarettes daily, eat red meat at every meal, and drink myself into a stupor. But if what the Nazis did was integral to their murderous program, surely we should be reluctant to do something similar. That the ideas of euthanasia and eugenics, plus a disarmed populace, do not evoke anxiety in many physicians and scientists is a source of profound disappointment. Recently *Time* chose Albert Einstein as person of the century. With due respect for the gentle genius, *Time* was wrong. The person with the most lasting influence was clearly Adolf Hitler.

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Original Research

Survivors of torture in a general medical setting: how often have patients been tortured, and how often is it missed?

ABSTRACT **Objectives** To measure the frequency of people reporting torture among patients in a medical outpatient clinic and to determine primary care physicians' awareness of their patients' exposure to torture. **Design** Cross-sectional survey followed by selected in-depth interviews of participants reporting a history of torture. Medical record review and interview of torture survivors' primary care physicians. **Setting** The internal medicine clinic of a large, urban medical center. **Participants** A convenience sample of 121 adult patients who were not born in the United States and who were attending the adult ambulatory care clinic. **Interventions** All participants were interviewed using the Detection of Torture Survivors Survey, a validated instrument that asks about exposure to torture according to the World Medical Association definition of torture. Participants who reported a history of torture were interviewed in depth to confirm that they had been tortured. We reviewed the medical records of participants who reported a history of torture and interviewed their primary care physicians. **Main outcome measures** Self-reported history of torture. The awareness of primary care physicians of this history. **Results** Eight of 121 participants (6.6% [95% confidence interval: 3.1%-13.1%]) reported a history of torture. None of the survivors of torture had been identified as such by their primary care physician. **Conclusions** Physicians of patients who have not been born in the United States and who attend urban general medical clinics frequently are unaware that their patients are survivors of torture. Primary care physicians can be the locus of intervention in the care of torture survivors. The first step is for physicians to recognize the possibility of torture survivors among their patients.

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Survivors of torture often seek treatment of the chronic physical and psychological consequences of torture in specialized treatment and rehabilitation centers. But access to these centers is limited by their unavailability in most cities, cultural beliefs about illness and distress, and language and financial barriers. Instead, torture survivors may present to physicians' offices, community health centers, or medical centers seeking care for their health problems. For instance, one case report described three survivors of torture who presented to an ambulatory care clinic in internal medicine for health problems that were related to torture. These problems included anxiety, depression, infected wounds, a ruptured tympanic membrane, a fractured rib, and musculoskeletal pains.[1]

Such a report is not surprising because torture is associated with chronic medical and psychological problems. In one study, US prisoners of war who had been tortured had higher incidences of chronic peripheral nerve, joint, and back disorders than a matched group of US prisoners of war who had not been tortured.[2] Other controlled studies of refugee populations who have been tortured found higher rates of anxiety and depression symptoms.[3-5] Five percent to 35% of the world's refugees are estimated to have been tortured,[6(p85)] and 400,000 survivors of torture live in the United States.[7] Physicians who care for immigrant patients may be particularly likely to deal with the health problems of survivors of torture. Five percent to 10% of patients who present to urban medical clinics who were born outside the United States are estimated to be survivors of torture.[8]

To test the hypothesis that survivors of torture will be found among a general medical outpatient population, we surveyed patients attending a medical clinic at an urban municipal medical center to determine how frequently patients reported a history of torture. Furthermore, we hypothesized that primary care physicians are not aware that their patients have been tortured.

PARTICIPANTS AND METHODS

Institutional review board approval was secured in June 1996. The study was performed from June through August 1996. Eligible patients were aged 18 years or older and were born in a country outside the United States and its territories. Patients born in this country and in US territories (Puerto Rico and Guam) were excluded because of their low prevalence of torture.

A nonconsecutive convenience sample of patients was drawn from patients attending the internal medicine ambulatory care clinic of a large, urban, municipal medical center in New York City. This clinic registered 9,547 visits among 2,700 unique patients during the study period. Two trained research assistants enrolled participants at 75% of clinic sessions during the study period. First, they examined the clinic registration and identified all eligible patients. About 50% of the registered patients were eli-

gible. Second, they approached those patients who were in the clinic waiting room. The large number of patients in this clinic at this medical center made it logistically impossible to reach most persons in a timely manner. About 15% of patients were approached (selected only on the basis of availability). Third, the research assistant asked the patient to participate in a study about "the health care needs of foreign-born patients." No reimbursement or incentives were offered for participation in the study. One of the research assistants was bilingual in Spanish. Hospital translators were used for participants who spoke French, Bengali, Russian, Polish, or Chinese (Mandarin and Cantonese dialects). To encourage participation and disclosure and to ensure safety, all participants were interviewed in a private office without friends or family.

The research assistants verbally administered the interview using the Detection of Torture Survivors Survey. The survey instrument has been validated against a standardized instrument and blinded, clinical interview for screening culturally heterogeneous clinical populations for exposure to torture.[9] The primary outcome was a self-reported history of torture, as determined by the survey. The Detection of Torture Survivors Survey uses the definition of torture of the World Medical Association's Declaration of Tokyo: "the deliberate, systematic or wanton infliction of physical or mental suffering by one or more persons acting alone or on the orders of any authority, to force another person to yield information, to make a confession or for any other reason."[10] All survivors of torture were asked whether the physicians who were treating them knew about their reported history of torture. Also, the investigators reviewed participants' medical records and interviewed the patients' primary care physicians to determine whether the physicians either had made notes on or knew about their patients' reported history of torture. The participants' presenting complaints and their treatments were not systematically recorded.

Participants whose histories of torture fit the criteria in the Detection of Torture Survivors Survey were interviewed by clinicians who were expert in the evaluation of torture survivors. The expert interviewers came from the medical and psychology staff of the Bellevue–New York University Program for Survivors of Torture. Clinical assessment was chosen because research indicates that clinical interviews have good diagnostic accuracy for defining exposure to torture.[11] The clinical assessment included taking a detailed history of medical and psychiatric problems and of trauma. The history of trauma was correlated with what is known about the conditions in the country where the trauma was said to have taken place. To further verify each participant's reported exposure to torture would require a full physical examination and possibly ancillary testing.[8] Such an examination can be both time-consuming and retraumatizing for a survivor.[12] We did not try to obtain complete forensic verification of the reported torture because we decided it was unethical.

We carried out a univariate analysis that included means, standard deviations (SDs), and 95% confidence intervals (CIs). Bivariate analyses for differences in means were computed by the Student t test. Differences in proportions were computed using a χ^2 test.

Summary points

- Over 6% of foreign-born primary care patients report a history of torture
- Physicians fail to identify the history of torture even when patients believe it has affected their health
- Torture survivors may not volunteer their torture history due to feelings of guilt, shame, or generalized mistrust of others
- Because of differing cultural beliefs about illness and distress, torture survivors may not relate their chronic health problems to torture experienced many years ago
- Outpatient medical providers who serve an immigrant population should consider torture and related traumas as a cause of health problems
- Outpatient medical providers can elicit a history of torture in the context of a safe environment, trusting relationship, and empathic interview

RESULTS

Of 124 patients who fit our criteria and were invited to participate in the study, 121 (98.0%) agreed to do so. Sixty-eight (56.2%) were male. The mean (±SD) age of the study group was 45.0 ± 14.4 years. The mean time they had lived in the United States was 12.2 years.

Of the 121 participants, 8 (6.6% [95% CI: 3.1%-13.1%]) reported a history of torture. Survivors of torture did not differ from people who did not report torture, by age (40.1 ± 12.7 years for torture survivors vs 44.9 ± 14.4 years for patients who had not been tortured; $P = 0.18$) or sex (male: 75% for torture survivors vs 55% for patients who had not been tortured; $P = 0.14$), but they had lived in the United States fewer years (7.4 ± 3.8 years for torture survivors vs 14.0 ± 0.7 for patients who had not been tortured; $P < 0.001$). The eight participants who reported a history of torture came from Bangladesh (n = 4), El Salvador (n = 2), Ivory Coast (n = 1), and Romania (n = 1). None of the participants who reported a history of torture to the investigators had ever reported this history to their primary care physician, according to the participant, physician, and a review of the participant's medical record. Participants who reported a history of torture had a mean of 3.0 visits with their primary care physician (range: 1.0-6.0). The types of torture reported included beatings with sticks and fists, prolonged beating on the

soles of the feet (*falanga*), rape, repeated verbal threats to life, and being forced to watch the torture of others.

DISCUSSION

About 1 of 15 patients born outside the United States who participated in this study reported a history of torture. Although one case report described three torture survivors who presented to an outpatient medical clinic,[1] we know of no published study estimating the frequency of torture survivors in such settings. Our results provide evidence that survivors of torture are being seen in physicians' offices and that primary care physicians should learn to identify which of their immigrant patients have been exposed to torture.[13-16] Although this study did not attempt to fully determine which demographic and clinical characteristics were associated with a reported history of torture, physicians should inquire about a history of torture in patients born outside of the United States whenever the differential diagnosis includes trauma-related illnesses, such as depression, anxiety, posttraumatic stress disorder, musculoskeletal complaints, and chronic headaches.

The primary care physicians in this study were unaware of their patients' reported history of torture. One explanation for this is that the physicians had simply not been educated to consider the possibility that their patients had been tortured. Also, physicians may unknowingly erect barriers to a survivor's story because they feel helpless, guilty, or overidentify with the patient. They thereby avoid any investigation of traumatic material or may even deny that torture exists. If physicians do not ask, patients may not tell. The emotional responses to torture commonly experienced by survivors—such as feelings of guilt, shame, or a generalized suspiciousness and mistrust of others—may prevent them from volunteering this information. Last, the survivors may not relate their health problems to torture experienced many years ago.

Eliciting a history of torture can help physicians to diagnose, treat, and refer patients appropriately. Without this knowledge, physicians may not fully meet their patients' needs. For instance, one participant, whose physician had diagnosed his condition as irritable bowel syndrome, believed that his chronic abdominal pain was due to persistent emotional suffering from torture. Eliciting a history of torture may be traumatic for survivors, so physicians should know how to reduce the risk of retraumatizing their patients by asking about torture. To make these skills even more useful, physicians should know how and when to refer survivors for appropriate health and social services, including to specialized treatment centers, where these are available. A growing body of literature describes the health needs of survivors and how general internists may effectively participate in their care.[8,12-15]

Our measured outcome was based on self-reported data. Previous reports have reviewed the accuracy of participants' reports of torture and trauma (82% sensitivity, 92% specificity).[17,18] It may be impossible to verify that torture has taken place if more objective sources of verification, such as prison records or medical reports from the country of the trauma, either do not exist or are not available. Because we did not attempt to determine the clinical characteristics associated with a reported history of torture, we did not systematically assess the medical problems and presenting symptoms of the study sample. Furthermore, since we used a convenience sample of patients, we cannot determine the prevalence of people reporting a history of torture among the population of adult patients born outside the United States who attended this medical clinic. Nevertheless, considering the large immigrant and refugee populations living in urban areas, it is not surprising that survivors of torture are presenting to urban medical clinics. Immigrants and refugees widely use outpatient medical clinics,[19] and they often have somatic manifestations of psychological disorders.[20] Outpatient medical providers can be the locus of intervention in the care of survivors of torture. The first step is for physicians to recognize the possibility that some of their patients may have problems that are related to torture.

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COMMENTARY

Health professionals cannot be silent witnesses

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Although international human rights and humanitarian law consistently prohibit torture under any circumstance, torture and ill treatment of detainees occur in more than half of the world's countries.[1,2] In their assessment of the frequency of torture reported by adults who had been born in foreign countries and who were attending an urban outpatient clinic, Eisenman and colleagues show the importance of recognizing torture in primary care settings. Clinicians have knowledge and expertise that enable them to document the physical and psychological manifestations of torture and to provide rehabilitative services. Torture survivors may present to physicians with medical or psychosomatic problems that do not immediately suggest their traumatic experiences. Primary care physicians have a unique opportunity to recognize the problem of torture in the communities they serve and to participate in the efforts to treat these problems. During the past 20 years, a movement for the care of survivors of torture has made remarkable progress in restoring health and well-being to those affected by torture.

Physicians have played a critical role in preventing torture by documenting physical and psychological evidence of it. Such documentation brings evidence of torture to light so that perpetrators may be held accountable for their actions and the interests of justice may be served. In August 1999, the first comprehensive international guidelines for the documentation of physical and psychological evidence of torture and ill treatment were developed in the The Istanbul Protocol, submitted to the United Nations High Commissioner on Human Rights last year.[3] The manual is the result of 3 years of analysis, research, and drafting undertaken by more than 75 experts in law, health, and human rights representing 40 organizations or institutions from 15 countries.

In the United States, physicians can contribute greatly to the health and well-being of survivors of torture by conducting medical evaluations of asylum applicants to assess possible physical and psychological evidence of torture. Political asylum enables survivors of torture to escape their persecutors and to begin rebuilding their lives. Clinicians interested in this work should contact organizations such as Physicians for Human Rights in Boston (phrusa@igc.apc.org) and Survivors International in San Francisco (SurvivorsIntl@msn.com).

In their capacity as health educators, physicians also have a responsibility to inform government and society of the adverse health effects of torture and other traumatic human rights abuses and to oppose them. Such information may be of critical importance in shaping international and national policy. Also, in providing testimony for applicants for political asylum who allege that they have been tortured, physicians have the opportunity to educate members of the judicial system who may have limited understanding of the problem of torture.

Increasingly, health professionals are recognizing the importance of protecting and promoting human rights as necessary preconditions for individual and community health.[4,5] When health is understood as a state of "complete physical, mental, and social well-being, and not just the absence of disease or infirmity,"[6] health professionals recognize an ethical responsibility to protect and promote human rights to provide the conditions for health and well-being. In this regard, health professionals who document medical evidence of torture and provide rehabilitative services are contributing to establishing a culture of human rights in the health sector and in society.

Torture is a profound concern for the world community. Its purpose is the deliberate destruction of not only the physical and emotional well-being of people but also, in some instances, the dignity and will of entire communities. It concerns all members of the human family because it impugns the very meaning of our existence and our hopes for a brighter future. Health professionals cannot afford to stand by as silent witnesses to the incalculable human suffering that is caused by torture and other human rights violations. At stake is not only the well-being of individuals and communities and our professional credibility as healers, but also the safeguarding of our humanity for centuries to come.

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Epidemiology and control of enterobiasis in a developmental center

ABSTRACT **Objective** To determine if enterobiasis could be controlled in a developmental center. **Design** Population-based study. Annual screening of all residents by perianal swabs for enterobiasis and on admission or discharge. Treatment of infected residents and their contacts with mebendazole, 100 mg orally, with two doses given 14 days apart. **Main outcome measures** The number of residents with enterobiasis and the cost of the program. **Results** The prevalence of enterobiasis fell rapidly and progressively, from 21% before mass medication to 1% after 3 years. **Conclusion** Mass medication of residents with enterobiasis and their contacts was beneficial, harmless, and cost effective.

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Enterobius vermicularis (pinworm) is a common helminthic infection, affecting almost 1 billion people worldwide from all socioeconomic classes.[1-5] In the United States, it affects 20 to 42 million people,[1] with a high prevalence among children,[6,7] institutional populations,[8-12] homosexuals,[1] and family contacts.[1-4] Enterobiasis may remain asymptomatic or cause perianal pruritus, insomnia, restlessness, irritability, and rarely, impetigo of scratched skin, vulvovaginitis, or enuresis.[1-5] Although effective medications have been available for decades, control of enterobiasis has been difficult because of reinfection, incomplete cure of infected people, and its ready transmissibility.

When some people are infected by a readily communicable disease, the entire population is placed at risk. This risk can be minimized by the mass treatment of people exposed to the index cases.[13,14] Several researchers have experimented with mass medication for enterobiasis,[8,11,15] but their studies have been marred by high rates of reinfection,[8] lack of a cost-benefit analysis,[8,11,15] short follow-ups, and inadequate surveillance data.[11,15] Consequently, mass medication has not become the standard of care. We describe our positive experience with mass medication, a 3½-year follow-up with surveillance, and a financial analysis.

PARTICIPANTS AND METHODS

This study was performed at a long-term care facility for people with developmental disabilities (mental retardation, epilepsy, cerebral palsy, and autism).[16] A third of the residents need skilled nursing care, and the rest live in intermediate-care units. Since the 1970s, when intestinal infections were endemic, all residents have been screened for *E vermicularis* by single perianal swabs annually and on admission or discharge. Specimens are collected by the swab-in-a-tube (Falcon Swube; Becton Dickinson, Franklin, NJ) paddle. Before shower or defecation, the tacky paddle is pressed against the anus. The paddle is examined by direct low-power (×10) light microscopy. The eggs of *E vermicularis* measure 50 by 20 μm; they are elliptic with a thick, smooth, colorless shell.

We reviewed records of resident census, new admissions, and *E vermicularis* prevalence (table 1). For 1994,

Table 1 *Annual resident population, number of new admissions, and number of Enterobius vermicularis cases, by year, between 1990 and 1998**

Year	Resident census	No. of new admissions	Residents with enterobiasis, No. (%)
1990	1,097	54	262 (24)
1991	1,091	24	266 (24)
1992	1,075	30	284 (26)
1993	1,035	19	300 (29)
1994	997	5	213 (21)
1995	832	5	110 (13)
1996	752	18	24 (3)
1997	867	192	16 (2)
1998	855	15	9 (1)

*All cases occurred in ambulatory residents. Mass treatment was started in July 1995. In that year, 80 cases occurred during the first 6 months and 30 cases during the second 6 months.

we also reviewed records for residents' age, sex, race, motor abilities (ability to walk or self-propel in a wheelchair), level of mental capacity, and presence of *E vermicularis* on perianal swabs (table 2).

Until June 1995, residents with enterobiasis had been treated with mebendazole, 100 mg given orally, which was repeated after 14 days. All residents living on the same unit as the index case (contact-residents) were screened and treated if results of the screening test were positive. In view of the persistently high prevalence of enterobiasis, we initiated mass treatment, effective July 1995. The index case and all contact-residents (without prior screening) were given oral mebendazole, 100 mg, two doses 14 days apart. This was approved by our infection control committee.

We analyzed the cost of the program using certain assumptions. The population consists of 1,000 residents, 30 residents per unit. The cost of treatment is $8 per resident (2 doses at $4/100-mg dose). The treatment cost was determined only for infected residents (before 1995) and for infected residents and their contacts (after 1995). Screening cost per perianal swab (code 87177 of *Current Procedural Terminology*)[17] was estimated at $5 (two thirds of its value [$7.47] per *Medicare Fee Schedule for 1999*).[18] The cost of screening contact residents was estimated until 1995; screening was abandoned after that time. Because before 1995 many residents were infected simultaneously, we conservatively estimated that screening was needed for a mean of only three resident contacts of infected residents. For example, if 7 of a total of 30 residents were infected, screening would have been performed for only the 23 residents who had not been infected. After 1995, we made allowance for treatment of contacts. Annual, admission, or discharge screening tests were excluded from this analysis because they remained unaffected. The initial cost of mass medication in 1995 was calculated only for ambulatory residents (68% of total, according to our data) because only they were infected by *E vermicularis*.

The relative risk for *E vermicularis* infection by host factors was estimated by determining the odds ratio. The risk was significant at the $P<0.05$ level if the 95% confidence intervals did not include the number 1.

Table 2 *Epidemiology of Enterobius vermicularis in the developmental center in 1994*

Epidemiologic characteristics	Sample size, No.	No. of cases; rate/100 persons	Odds ratio	95% Confidence interval
Sex				
Male	579	161; 28%	2.71	1.94–3.79
Female	418	52; 12%		
Age, yr				
<20	64	3; 5%	0.71	0.52–0.96
20–29	175	24; 14%		
30–39	405	97; 24%		
40–49	265	64; 24%		
50	88	25; 28%		
Race				
White	775	164; 21%	0.95	0.66–1.36
Nonwhite	222	49; 22%		
Locomotion				
Ambulatory	682	213; 31%	286.94	17.82–4,619.28
Nonambulatory	315	0; 0%		
IQ				
<20	766	169; 22%	1.20	0.83–1.74
20–69	231	44; 19%		
Total	997	213; 21%		

Summary points

- Enterobiasis is a common and readily transmissible helminthic infection
- Single-dose treatment has been ineffective in its control
- Two-dose mass treatment of patients and contacts helped reduce its prevalence in a developmental center
- Mass medication provided complete cure, prevented autoinfection, and treated the reservoir of undiagnosed patients

RESULTS

The numbers of residents, new admissions, and enterobiasis cases for the study period are presented in table 1. The initiation of mass medication in 1995 progressively reduced the prevalence from 21% in 1994 to 1% in 1998.

All cases of enterobiasis occurred in ambulatory residents. In this subgroup, *E vermicularis* prevalence declined from 31% in 1994 to 1% in 1998. The prevalence of *E vermicularis* was significantly greater among men and older residents; it was not related to IQ or race (table 2).

The current annual program cost was lower than before mass medication (table 3). The cost of the initial mass treatment of the 68% ambulatory residents was estimated at $5,440. This excess initial expense was fully offset by savings during the first two years.

DISCUSSION

We controlled enterobiasis by interrupting the incomplete treatment and autoinfection cycle and reducing the reservoir of infection. *E vermicularis* eggs take 14 days to mature to adult worms. We prevented autoinfection by administering two anthelminth doses 14 days apart. Mebendazole can kill only the adult worm (not its eggs or larvae) by inhibiting its microtubule formation and glucose synthesis.[3,11] The surviving eggs and larvae in a host's intestines can mature to new adults in 14 days. A second dose, 14 days after the first, is crucial to kill these new adults.[11] A second dose sooner than 14 days would leave the later-maturing adults unaffected, and after 14 days, the new adults would have already produced eggs.[1-4,11]

Table 3 *Financial analysis of the mass medication program for enterobiasis**

Year, *Enterobius vermicularis* prevalence, estimated cases (No.)/1,000 residents	Cost of treatment = No. of cases treated × cost ($8) per resident, $	Cost of contact screening = No. of contacts (3/case) × cost ($5) per screening test, $	Total annual program cost for treatment and screening, $
1993, 29%, 290	2,320	4,350	6,670
1994, 21%, 210	1,680	3,150	4,830
1995†, 680	5,440	0	5,440
1998, 1%, 10‡	2,400	0	2,400
Year, hypothetic; zero prevalence	0	0	0

*For assumptions, see the description of the financial analysis under "Participants and methods"
†Gives the actual initial cost of mass treatment of all ambulatory residents.
‡Includes 290 contacts.

E vermicularis has multiple transmission modes (anus to finger to mouth, food, dust, retrograde from anus to intestine) and prolonged egg viability (14 days). Unlike geohelminths, it can reproduce in humans without passing through an intermediary soil phase. Thus, it can be readily transmitted from person to person.[1-4] In institutions, transmission is further facilitated by communal living and the residents' difficulties in maintaining good personal hygiene. This creates a large reservoir of infection that may be treated using mass medication.

Our pre-1995 strategy failed to reduce the reservoir of infection because we did not identify or treat residents who had been in contact with infected residents but did not have perianal eggs (perianal swabs identify only those with perianal eggs). Because we did not treat these "infected but undiagnosable" residents, they kept reinfecting other residents, including those who had recently been cured. Mass medication successfully reduced the reservoir of infection by killing worms in contacts who were either not screened or were infected but undiagnosable.

Our study supports the recommendation of other investigators that for the effective control of enterobiasis, all household contacts should be treated with two anthelminth doses, 14 days apart.[1,3,8,11] However, current prescribing recommendations are silent about mass medication of the contacts and recommend the use of a second dose only if the case is not cured.[19] Clearly, these guidelines should be amended.

Despite mass medication, enterobiasis has not been eradicated in our center. Moreover, it took 3½ years for its prevalence to decrease from 21% to 1%. This may be because some eggs may take more than 14 days to mature and, consequently, escape harm from the second anthelminth dose administered on the 14th day. Alternatively, some persons are being reinfected due to unhygienic lifestyles (nail biting, inadequate hand washing or perianal cleaning, and pica). It may be necessary to treat such repeatedly infected residents with three to five doses of medication at sequential 14-day intervals.[20]

Effective mass medication (like immunization or water fluoridation) must be based on three tenets: nonmaleficence, beneficence, and financial affordability.[14] First, mebendazole is effective, fairly free of adverse effects, and easily administered orally, and less than 1% is systemically absorbed. It has even been used safely during pregnancy.[11]

Second, mass medication should be a charitable act toward healthy people who would otherwise not need it (beneficence). Our strategy probably did improve the residents' life by preventing perianal itch, insomnia, and irritability.

Third, the cost of any prevention strategy should be reasonable in relation to the benefit. Mass medication saved money after 2 years (table 3). No allowance has been made in this analysis for reduced suffering and improved health—the primary benefits.

To reduce the cost of the program, we relied on screening results from single specimens. Therefore, our data slightly underestimate the actual prevalence. The collection of specimens on three consecutive days is recommended to improve diagnostic sensitivity.[1-5] Nevertheless, our data are adequate for determining temporal trends because we used the same number of specimens each year.

Before 1995, the prevalence of enterobiasis in our residents was similar to that of other reports,[8-11] except for an inexplicably low (4.5%) prevalence in a study of 3,388 adults in New York with developmental disabilities.[12] Only ambulatory residents were infected with *E vermicularis*, suggesting that residents who move about have more opportunities to contract infection through pica, from contacts during group activities, and from their greater physical ability to coordinate finger motion between their anus and mouth.

In contrast with the general population, the prevalence of enterobiasis was higher among older residents (table 2).

This paradox may be because people with developmental disabilities, like children, engage in frequent hand-to-mouth activity that facilitates infection. Once infected, the autoinfection cycle perpetuates infection. Thus, older persons end up with a higher cumulative infection because of longer exposure.

Enterobiasis prevalence decreased despite the increased number of admissions in 1997 (table 1). The reason for a higher prevalence of *E vermicularis* among male residents is unclear (table 2). A similar observation has been made in New York.[12]

Reinfection after treatment is common with enterobiasis. In one developmental center, its prevalence declined from 60% to 0% after mass medication with mebendazole, but 12% of the residents subsequently became reinfected. To prevent reinfection, general control measures (hand washing, fingernail trimming, daily perineal cleaning, pica control, housekeeping, and the use of long pajamas instead of nightgowns) should be emphasized.[5]

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COMMENTARY

The benefits of screening must outweigh the risks and costs

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By instituting a simple screening program, Lohiya et al were almost able to eliminate enterobiasis from their population of institutional residents. Despite the initial cost of mass treatment, they realized a decrease in their overall costs within two years of starting the program. The authors' success provides an opportunity to review screening programs and consider when and why some can be effective, while others, although equally important, can be ineffective or even harmful to patients. Population screening can be done with three purposes in mind.

First, screening can be carried out for the direct benefit of patients. Many of our interventions based in the community, such as offering blood pressure checks at health fairs, are geared toward helping individuals. Second, screening can be used for the protection of others. Several such tests are routinely conducted on donated blood products to prevent the transmission of infectious agents. Finally, screening can be performed simply to gather baseline information on individuals or populations.

When assessing the potential value of any screening program, it is important to clarify the purpose of the program. The screening program presented here benefited both the screened persons, who were guaranteed treatment after a single positive test result, and other residents of the facility, particularly the roommates of infected people.

Of course, screening for all possible conditions, even in a selected group, is impossible and undesirable. Unless

screening is being conducted to provide data for academic or public health use, various factors should be considered. The condition that is being screened for should be either sufficiently common or devastating to warrant the time and expense. Neonatal screening programs for metabolic disorders identify only a few abnormalities in the population, but among them are preventable cases of severe neurologic disability.

Early diagnosis must be associated with better outcomes. Major concerns regarding the outcomes of patients who are screened and treated for early prostate cancer have made screening with the prostate-specific antigen test a controversial issue. The treatment that produces better outcomes must also be available to the screened population.

The screening technique must be sensitive enough to identify most cases. The screening technique must be specific enough to avoid an excess of unnecessary treatments. Attempts to use pelvic sonography as a screening tool for ovarian cancer resulted in an unacceptably high rate of unneeded laparotomies. The possible consequences of false-positive results need to be considered when planning any screening program.

The cost and risks of screening should not outweigh the benefits. Cost includes the financial burden of the screening program and follow-up and the potential personal cost to the people being screened in money, time, and effort. Is there excessive anxiety or inconvenience associated with the screening test or the follow-up needed for positive test results? How does this balance against the possible benefit for each patient? When Indiana instituted mandatory screening for the human immunodeficiency virus (HIV) as a requirement for a marriage license, false-positive results greatly outnumbered true-positive results. Within one year of beginning the program, a substantial proportion of Indiana residents were driving across state lines for their marriage licenses to avoid the expense of the HIV test. People were inconvenienced, and the state lost substantial revenues—all with little benefit.

The enterobiasis screening policy adopted at Fairview Developmental Center succeeded for several reasons. Enterobiasis, although not devastating, was common at the center, with an annual incidence of 15% to 31% in the years preceding the program. Early diagnosis and treatment of those infected and their close contacts led to better care for both the people tested and their roommates. Mebendazole is readily available and affordable, and this treatment exposed residents to few adverse effects. Due to the low cost and low toxicity associated with mebendazole use, specificity in screening and treatment were successfully compromised to increase sensitivity. Contact screening imposed in the earlier policy entailed an invasive and a resource-consuming process that probably had poor sensitivity for identifying newly infected persons. The improved screening technique and more aggressive/expansive treatment policy described by Lohiya et al decreased infection rates and overall cost.

An unexpected present

The young woman was clearly visible from the consulting room window, her emanciated frame draped in the tattered remnants of a sari, with a marasmic toddler balanced on her hip. She begged for food and alms, reaching wordlessly through the open windows of the buses parked at the bus stand.

She frequently pointed to the toddler, her eyes eloquent and beseeching. Few could hold out against this poignant appeal, and she made a good living. I watched her every day and noticed her abdomen getting bigger. On my way home from work one day, I inquired, "Pregnant?"

"Yes."

"You must go to the municipal hospital. They will give you the tetanus toxoid injections and folic acid supplements. Your child will get free immunizations."

"The municipal hospital is not for people like me."

It was a futile argument. I found myself collecting hematinics and calcium tablets from medical representatives for her. I administered the tetanus toxoid injections, but could not persuade her to undergo any blood tests. So her blood group and HIV status remained unknown.

Six months later, hearing a commotion in the waiting room, I peered out. She was in labor, on the floor, watched in horror by the rest of the patients.

"Can you go somewhere else? This is only a consultation practice. I do not deal with childbirth."

Her only answer was a groan, after which she started to push. Frantic, I cleared the waiting room, and, after the lapse of 10 years, I conducted an amateur delivery, with no implements and no assistance. It was a healthy baby girl.

"Where will you go?"

"You know I have nowhere to go."

This was more than I had bargained for.

"Okay. You can spend the night on the veranda. Do you have a family?"

"No."

That was not possible. Had she sprung up like a weed?

"This birth has to be registered."

"Tomorrow doctor. I cannot move today."

The next morning she had disappeared. The veranda was wiped clean, and she had left me a present. It was caterwauling behind a stone bench, wrapped in a dirty piece of cloth.

There has been no trace of the mother in 15 years. The present has, in the meantime, grown into a sister for my other children.

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Extent and determinants of error in physicians' prognoses in terminally ill patients: prospective cohort study

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ABSTRACT **Objectives** To describe physicians' prognostic accuracy in terminally ill patients and to evaluate the determinants of that accuracy. **Design** Prospective cohort study. **Setting** Five outpatient hospice programs in Chicago. **Participants** A total of 343 physicians provided survival estimates for 468 terminally ill patients at the time of hospice referral. **Main outcome measures** Patients' estimated and actual survival. **Results** Median survival was 24 days. Of 468 predictions, only 92 (20%) were accurate (within 33% of actual survival); 295 (63%) were overoptimistic, and 81 (17%) were overpessimistic. Overall, physicians overestimated survival by a factor of 5.3. Few patient or physician characteristics were associated with prognostic accuracy. Male patients were 58% less likely to have overpessimistic predictions. Medical specialists excluding oncologists were 326% more likely than general internists to make overpessimistic predictions. Physicians in the upper quartile of practice experience were the most accurate. As the duration of the doctor-patient relationship increased and time since last contact decreased, prognostic accuracy decreased. **Conclusions** Physicians are inaccurate in their prognoses for terminally ill patients, and the error is systematically optimistic. The inaccuracy is, in general, not restricted to certain kinds of physicians or patients. These phenomena may be adversely affecting the quality of care given to patients near the end of life.

INTRODUCTION

Although physicians commonly have to prognosticate, most feel uncomfortable doing so.[1] Neither medical training[1,2] nor published literature[3,4] treat prognostication as important, and prognostic error is widespread.[2] Unfortunately, prognostic error may have untoward effects on both patient care and social policy.

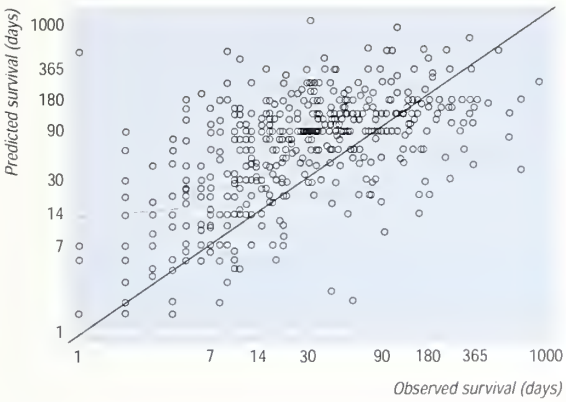
Parkes showed that physicians' predictions of survival in 168 cancer patients were often erroneous and optimistic,[5] and these findings were confirmed by subsequent studies.[6-10] However, previous work has been limited by the use of small samples of patients and of prognosticators (typically <4), failure to examine whether certain types of physicians are more likely to err in certain types of patients, and neglect of the possibility of different determinants of optimistic and pessimistic error. We conducted a large, prospective cohort study of terminally ill patients to evaluate the extent and determinants of prognostic error.

PARTICIPANTS AND METHODS

Our cohort consisted of all patients admitted to 5 outpatient hospice programs in Chicago during 130 consecutive days in 1996. Participating hospices notified us about patients on admission, and we immediately contacted the referring physicians to administer a 4-minute telephone survey. Of the 767 patients (referred by 502 physicians), 65 did not meet the entry criteria (they were children, were denied hospice admission, or refused to give consent), and 51 died before we were notified (survival predictions would be meaningless). Of the remaining 651 patients, for 66 (10.1%) we contacted the physician only after the patient's death (and so could not get meaningful prognoses), for 14 (2.2%) the physician refused to participate, and for 67 (10.3%) the physician could not be contacted. We, thus, completed surveys with 365 physicians caring for 504 patients (77.4%). Comparison of these 504 patients with the 147 excluded patients showed no important differences in patient or physician characteristics. On June 30, 1999, we had dates of death for 486 (96.4%) of the 504 patients. Because data were occasionally missing, not all totals in the analyses are equivalent.

We obtained the patients' age, sex, race, religion, marital status, diagnosis, and comorbidities from the hospice. From the survey, we obtained an estimate of how long the patient had to live; information about the patient, including Eastern Cooperative Oncology Group performance status[11] and duration of illness; information about the physician, including experience with similar patients and self-rated dispositional optimism; and information about the doctor-patient relationship, including the duration, recentness, and frequency of contact. From public records, we obtained other data on the physicians, such as specialty, years in practice, and board certification. Dates of patients' deaths were obtained from public death registries or the hospices.

We divided the observed by the predicted survival and deemed prognoses accurate if this quotient was between 0.67 and 1.33. Values less than 0.67 were optimistic prognostic errors, and those greater than 1.33 were pessimistic. We conducted analyses using different cutoff points or more categories, as well as analyses that treated this quotient as a continuous measure, but these analyses did not contravene the results presented. To evaluate associations



Predicted vs observed survival in 468 terminally ill hospice patients. Diagonal line represents perfect prediction. Circles above diagonal line represent patients in whom survival was overestimated; those below line are patients in whom survival was underestimated.

between categoric and continuous variables and the trichotomous prognostic accuracy variable, we used χ^2 tests and analysis of variance, respectively. We used multinomial logistic regression to assess the multivariate effect of patient and physician variables on prognostic accuracy.

RESULTS

The patients had a mean (SD) age of 68.6 (17.4) years, and 225 (44.6%) were men. The diagnosis in 326 patients (64.7%) was cancer, in 62 patients (12.3%) it was acquired immunodeficiency syndrome (AIDS), and 116 patients (23.0%) had other conditions. The mean duration of disease was 83.5 (135.8) weeks, and the median performance status was 3 (corresponding to >50% of the day spent bedridden). The physicians had a median duration of medical practice of 16 years; of 363 physicians, 291 (80.2%) were men; of 365 physicians, 293 (80.3%) were board certified; and of 345 physicians, 255 (73.9%) rated themselves optimistic. Of 358 physicians who listed their specialty, 114 (31.8%) specialized in general internal medicine, 71 (19.8%) in internal medicine subspecialties excluding oncology, 61 (17.0%) in oncology, 55 (15.4%) in family or general practice, 27 (7.5%) in geriatrics, and 30 (8.4%) were surgeons or practiced other specialties. In the past year, the physicians had cared for a median of 5 patients with the same diagnosis and had referred a median of 8 patients to a hospice. They had known the patient a mean of 159.2 (307.7) weeks, had 11.1 (13.9) contacts in the previous 3 months, and had examined the patient 14 (29) days before.

Physicians' prognostic estimates

In only 18 of 504 patients did the physician refuse to predict survival to us. Of the remaining 486 patients, 18 had missing dates of death, leaving 468 patients referred by 343 physicians for analysis of prognostic accuracy. The figure illustrates the extent of the error. The median observed patient survival was 24 days. The mean ratio of predicted to observed survival was 5.3. The correlation between predicted and observed survival was 0.28 ($P < 0.01$). When an accurate prediction was defined as between 0.67 and 1.33 times the actual survival, 92 (19.7%) of 468 predictions were accurate, 295 (63.0%) were optimistic, and 81 (17.3%) were pessimistic. When an accurate prediction was defined as between 0.50 and 2.0 times the actual survival, 159 (34.0%) of 468 predictions were accurate, 256 (54.7%) were optimistic, and 53 (11.3%) were pessimistic. Death occurred within 1 month of the predicted date for 195 patients (41.7%), at least 1 month before the predicted date in 214 patients (45.7%), and at least 1 month after the predicted date in 59 patients (12.6%).

The extent of prognostic error varied depending on both observed and predicted survival (table). The longer the observed survival (that is, the less ill the patient), the lower the error; conversely, the longer the predicted survival, the greater the error.

Factors associated with prognostic accuracy

Bivariate analyses of the trichotomous accuracy variable and patient attributes showed no important differences in patients' age, sex, race, religion, or marital status. However, patients with cancer were the most likely to have overoptimistic predictions (202 [67.1%] of 301 patients with cancer vs 37 [63.8%] of 58 patients with AIDS and 56 [51.4%] of 109 other patients) and the least likely to have overpessimistic predictions (39 [13.0%] of 301 patients with cancer vs 13 [22.4%] of 58 AIDS patients and 29 [26.6%] of 109 other patients); AIDS patients were the least likely to have correct predictions (8 [13.8%] of 58 patients vs 60 [19.9%] of 301 patients with cancer and 24 [22.0%] of 109 patients with other conditions). All comparisons were significant ($P < 0.01$).

Doctors' overestimates of patient survival by observed and predicted survival

	% Overestimate in survival (mean)	No. of patients
Observed survival (days)		
1–30	795	251
31–90	288	130
91–180	136	49
>180	71	38
Overall	526	468
Predicted survival (days)		
1–30	192	150
31–90	382	144
91–180	501	119
>180	1,872	55
Overall	526	468

Bivariate analyses of the physician attributes showed no important differences in sex, years in medical practice, board certification, self-rated optimism, number of hospice referrals in the past year, or number of medically similar patients in the past year. However, physicians in medical subspecialties excluding oncology were the least likely to give correct estimates (8 [10.1%] of 79 physicians vs 11 [36.7%] of 30 physicians in surgery or other, 18 [26.9%] of 67 physicians in family or general practice, 24 [22.9%] of 105 physicians in oncology, and 30 [16.7%] of 180 physicians in geriatric or general internal medicine), and oncologists were the least likely to be overpessimistic in their estimates (10 [9.5%] of 105 oncologists vs 21 [26.6%] of 79 physicians in other internal medicine subspecialties, 13 [19.4%] of 67 physicians in family or general practice, 31 [17.2%] of 180 physicians in geriatric or general internal medicine, and 4 [13.3%] of 30 physicians in surgery or other). All comparisons were significant ($P < 0.01$).

Among the doctor-patient relationship variables (such as length of professional relationship, number of recent contacts, and time since last examination), the interval since last examination was important: overpessimistic predictions were associated with the most recent examinations (7.5 days), overoptimistic predictions with the next most recent examinations (13.8 days), and the correct predictions with the longest interval since physical examination (19.5 days; $P < 0.05$ for these comparisons).

The trichotomous prognosis variable was regressed on patients' age, sex, race, diagnosis, duration of disease, and performance status and on physicians' experience, sex, optimism, board certification, specialty, related practical experience, duration of relationship, number of contacts, and interval since last examination (full results are available on the *BMJ* website). The model showed that physicians' prognostic accuracy was independent of most patient and physician attributes. After other attributes were adjusted for, however, male patients were 58% less likely to have overpessimistic than correct predictions (odds ratio [OR], 0.42; 95% confidence interval [CI], 0.18-0.99). Physicians in the upper quartile of practice experience were 63% less likely to make optimistic rather than correct predictions (OR, 0.37; CI, 0.19-0.74) and 78% less likely to make pessimistic rather than correct predictions (OR, 0.22; CI, 0.08-0.61). Physicians with medical subspecialty training (excluding oncologists) were less than 6 times more likely than geriatricians and general internists to make pessimistic rather than correct predictions (OR, 3.26; CI, 1.01-10.67). As the duration of the doctor-patient relationship increased, so, too, did the physician's odds of making an erroneous prediction. For example, each 1 year longer that the physician had known the patient resulted in a 12% increase in the odds of an overpessimistic prediction (OR, 1.12; CI, 1.02-1.22). Also, as the interval since the last physical examination increased, the odds of a physician making a pessimistic rather than a correct prediction decreased; each day longer resulted in a 3% decrease in the odds (OR, 0.97; CI, 0.94-0.99).

DISCUSSION

Our study of 365 physicians and 504 hospice outpatients found that only 19.7% of prognoses were accurate. Most predictions (63.0%) were overestimates, and physicians overall overestimated survival by a factor of about 5. These prognoses were physicians' best guesses about their patients' survival prospects, objectively communicated to the investigators and not to patients themselves. Close multivariate examination showed that most physician and patient attributes were not associated with prognostic error. The tendency of physicians to make prognostic errors, however, was lower among experienced physicians. Moreover, the better the physician knew the patient—as measured, for example, by the length and recentness of their contact—the more likely the physician was to err.

These findings have several implications. First, undue optimism about survival prospects may contribute to late referral for hospice care, with adverse implications for patients.[12,13] Indeed, although physicians state that patients should ideally receive hospice care for 3 months before death,[14] patients typically receive only 1 month of such care.[15] The fact that physicians have unduly optimistic ideas about how long patients have to live may partly explain this discrepancy. Physicians who do not realize how little time is left may miss the chance to devote more of it to improving the quality of patients' remaining life. Second, to the extent that physicians' implicit or explicit communication of prognostic information affects patients' own conceptions of their future, physicians may contribute to patients making choices that are counterproductive. Indeed, in 1 study, it was found that terminally ill cancer patients who hold unduly optimistic assessments of their survival prospects often request futile, aggressive care rather than perhaps more beneficial palliative care.[16] Third, our work hints at corrective techniques that might be used to counteract prognostic error. Disinterested physicians, with less contact with the patient, may give more accurate prognoses, perhaps because they have less personal investment in the outcome.[17] Clinicians, therefore, may wish to seek second opinions regarding prognoses, and our work suggests that experienced physicians may be a particularly good source of opinion. Finally, our work suggests that prognostic error in terminally ill patients is uniformly distributed. This has implications for physicians' training and self-assessment because it suggests that there is not one type of physician who is prone to error, nor is there one type of patient in whom physicians are likely to err.

Obtaining prognostic information is often the highest

priority for seriously ill patients, eclipsing their interest in treatment options or diagnostic details.[18,19] Reliable prognostic information is a key determinant of both physicians' and patients' decision making.[16,20,21] Although some error is unavoidable in prognostication, the type of systematic bias toward optimism that we have found in physicians' objective prognostic assessments may be adversely affecting patient care.

Elena Linden and Tammy Polonsky helped administer the survey.

Contributors: N A C initiated the study, conceptualized the key questions, oversaw data collection, assisted in data analysis, and cowrote the article. E B L conceptualized the key questions, performed most of the data analysis, and cowrote the article. Both authors will act as guarantors.

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COMMENTARY

Why do physicians overestimate life expectancy of a person who is terminally ill?

American physicians refer patients to hospice too late. Christakis and Lamont's research shows that physicians are poor prognosticians and tend to overestimate how long a person who is terminally ill will live. Most of the patients (65%) in their study had cancer. This is similar to the proportion (60%) found in hospice patients in a survey carried out in 1995, despite that cancer is not the leading cause of death in the United States.[1] Seven percent of the patients referred to these hospices died within hours of admission. This 11th-hour referral pattern is at least partly due to physicians not recognizing the nearness of death.

A patient is eligible for hospice care if he or she has an estimated life expectancy of 6 months or less. As the authors point out, the actual length of stay is usually less than 6 weeks. Thus, most patients come to hospice during a period of rapid physical change and often in crisis. And they don't live long beyond the crisis.

At times of crisis, the immediate management of symptoms and relieving the family overshadow the need to address the emotional and spiritual issues of remembering, forgiving, and bringing to closure the issues of a person's life. Providing a physically comfortable death is a worthy goal; it reduces regrets among survivors. Yet, more time provides the opportunity for the dying person to participate directly in the process of validating the past and planning for the future and gives the family the chance to relish or repair bonds with the dying person. The National Hospice Organization has tried to educate physicians about how to predict appropriate entry points to hospice for various conditions.[2] These guidelines should be incorporated into the general education of physicians.

The authors' suggestion that prognostication should be done by a "disinterested" experienced physician hits near a common thread of late hospice referrals. Physicians may be reluctant to acknowledge that patients they know well are close to death. This can be compounded by a patient's and family's preference to keep hoping for the patient to

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live longer. Those of us who know our patients longer often become attached to them. We, too, hate to admit that death is near. I remember a woman in her 60s I was treating for metastatic breast cancer. She was admitted to the hospital with gastric bleeding that was thought to be unrelated to her cancer. I talked to her and her husband and was optimistic about the reversibility of the problem. Because I was trying not to scare her, I did not discuss the issues of advanced directives and resuscitation. That night, she went into shock, required intubation, and went to the intensive care unit. Her husband was devastated and angry that she had had such treatment. The next day, he and I together decided that no additional treatment would be given to prevent her death. He sat with her for more than 24 hours before she died. My desire to be optimistic prolonged her dying and added anguish to her husband. Physicians often rail against the denial of patients and their families. Yet, we are not immune.

Decisions at the end of life are not just guided by physicians. There is a complex interaction when a physician recognizes and acts on an accurate prognostication, what the physician tells the patient and family, and what the patient and family actually hear. Christakis and Lamont have begun to tease out the factors involved in end-of-life predictions. In oncology, the end of chemotherapy usually signals the terminal phase. In other specialties, prognosis is much less demarcated. Physicians should better define landmarks or turning points in prognosis and begin to acknowledge these to themselves and their patients. Only then can physicians adequately guide patients through the dying process.

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A Book That Informed My Practice

What a Blessing She Had Chloroform by Donald Caton, Yale University Press, 1999, $30.00

When her eldest daughter gave birth in 1859, Queen Victoria remarked, "What a blessing she had chloroform. Without it I think her strength would have suffered very much." The Queen, an experienced mother, saw no controversy in the use of pain relief in labor. Yet the subject has continually been dogged by controversy (witches were burnt for it). Donald Caton, an eminent chronicler of the history of obstetric analgesia, has written a fascinating account of the social background to its evolution since the introduction of ether, then chloroform, to obstetrics by James Young Simpson in Edinburgh in 1847. The subject is viewed in the wider context of the whole metamorphosis of medicine in the 19th century.

The story began when medicine, religion, and philosophy were intermixed and the balance of earth, air, fire, and water still controlled our bodies, with science a late partner to medicine. Pain had an important role in society: to maintain order and collect information—a purpose still prevalent in some societies today. Its role in childbirth—education, punishment ("She's got to learn"), atonement, redemption, and bonding ("You'll love your baby all the more")—also survives. Writing in the middle of the 19th century, John Stuart Mill pointed out that it was not God but nature that inflicted pain. It was surely permissible to improve on nature. Anesthesia formed part of a new humanitarian movement that aimed "to eliminate suffering from human experience, a tendency that was not particularly apparent before then."

Writing with grace and humor, Caton traces the progress of obstetric anesthesia and analgesia through the bombastic overexuberance of Simpson, the opposition from a cautious medical profession, the diligent and innovative perspicacity that enabled Snow to put the technique on its feet and quell the opposition, the ill-advised enthusiasm for twilight sleep, and the reaction to the overuse of drugs embodied in Grantly Dick Read's natural childbirth campaign.

The need for analgesia in labor was thought to result from the decadent lifestyle (or heightened sensibilities) of modern civilized women. Read resurrected this 19th century belief in asserting, apparently from a personal series of two, that "primitive" people had painless, trouble-free labors but that educated women need feel no pain if fear were eliminated. Would that either of these assertions were true.

Both medical and non-medical readers will enjoy this book but may find the blanket term "anesthesia" confusing. It is used to refer to inhalational analgesia as developed by Snow, true anesthesia (throughout labor) as advocated by Simpson, deep sedation as in twilight sleep, regional (epidural) anesthesia as once used for labor and now reserved for surgery, and the milder regional analgesia. Caton does not mention, perhaps because it still eludes most of humanity, that effective analgesia with mobility and an alert mother and baby can now be provided for labor. Historically, women have demanded analgesia in labor when the medical profession approached it with caution, yet now that it has become vastly safer, many women reject it as dangerous.

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Analysis of questions asked by family physicians regarding patient care

ABSTRACT **Objectives** To characterize the information needs of family physicians by collecting the questions they asked about patient care during consultations and to classify these in ways that would be useful to developers of knowledge bases. **Design** An observational study in which investigators visited physicians for two half-days and collected their questions. Taxonomies were developed to characterize the clinical topic and generic type of information sought for each question. **Setting** Eastern Iowa. **Participants** Random sample of 103 family physicians. **Main outcome measures** Number of questions posed, pursued, and answered; topic and generic type of information sought for each question; time spent pursuing answers; and information resources used. **Results** Participants asked a total of 1,101 questions. Questions about drug prescribing, obstetrics and gynecology, and adult infectious disease were most common, comprising 36% of the total. The taxonomy of generic questions included 69 categories; the three most common types, comprising 24% of all questions, were "What is the cause of symptom X?" "What is the dose of drug X?" and "How should I manage disease or finding X?" Answers to most questions (n = 702 [64%]) were not immediately pursued, but of those pursued, most (n = 318 [80%]) were answered. Physicians spent an average of less than 2 minutes pursuing an answer, and they used readily available print and human resources. Only two questions led to a formal literature search. **Conclusions** Family physicians in this study did not pursue answers to most of their questions. Questions about patient care can be organized into a limited number of generic types, which could help guide the efforts of knowledge-base developers.

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INTRODUCTION

Physicians often have questions about the care of their patients. Should a 6-week-old girl exposed to chickenpox be given varicella-zoster immunoglobulin? What could cause urinary retention in an elderly woman? Is it safe to prescribe nicotine patches for a pregnant woman? Most questions occur at the point of care in busy clinics and hospitals.[1-3] Answers may or may not be pursued, and if pursued, they may or may not be found.

When faced with questions about patient care, physicians are advised to seek the "best available evidence" to guide their decisions.[4] However, this advice is often ignored in practice.[1,5-7] Instead, practicing physicians seek "bottom-line" answers from highly digested, immediately available resources.[1,5,6,8-11]

Our objective was to characterize the information needs of family physicians by collecting their questions and classifying them in ways that would be useful to developers of knowledge bases.[12] We collected questions about medical knowledge that could potentially be answered by general sources such as textbooks and journals, not questions about patient data that would be answered by the medical record.[13] Previous studies have analyzed a relatively small number of questions, making it difficult to develop comprehensive descriptions and classification schemes.[1,2,14,15] Questions that arise in practice could help guide the content of textbooks, review articles, continuing education courses, and medical school curricula. Questions without answers could help guide research.

PARTICIPANTS AND METHODS

Participants

All 386 family physicians working in the eastern third of Iowa (area code 319) were eligible for our study, and using a physician database maintained by the University of Iowa College of Medicine, Iowa City, we invited them in random order to participate. To achieve our goal of at least 100 participants and 1,000 questions, we invited 129 physicians. This goal was based on a subjective sense of adequacy and on the frequency of questions occurring in previous studies.[1,2,14] We excluded retired physicians, house officers, and full-time emergency physicians.

Procedures

One week after receiving an introductory letter, each physician was invited by telephone to participate. Two half-day visits were scheduled, usually separated by a week. One of us (J W E) made the first visit, and a research nurse made the second. All visits occurred between April 1996 and December 1997. Before the first visit, the participants received a letter informing them about the study:

> We are interested in everything from a clear-cut question ("What's the dose of metformin?") to the vague, fleeting uncertainties that you and I would normally keep to ourselves ("I'm not totally sure what this rash is, even though I'm going to call it a contact dermatitis for now"). Normally, we spend the day trying to convince our patients and our nurses that we know what we're doing. I'm asking you to reveal your ignorance (to me—not to your patients or nurse), which is not a natural thing to do.

We included all clinical questions related to the care of specific patients. We excluded requests for facts that could be obtained from the medical record ("What was her blood potassium concentration?") or from the patient ("How long have you been coughing?").

The visiting researcher stood in a clinic hallway or a physician's office and recorded questions between patient visits by writing them on a standard form. When a physician pursued an answer, we recorded the resources used and the time spent with each resource. When an answer was not pursued, we asked why. Most questions referred to patients seen during the observation period, but we also recorded questions recalled about patients seen earlier.

Categorizing questions

The questions were categorized as either topics or generic questions (details are given on the *BMJ* web site: www.bmj.com). The topic taxonomy, which included 63 categories based on specialties, was modified from a system used to file journal articles.[16] We added categories to accommodate questions that did not fall into a medical specialty (such as anatomy, legal issues, or medical ethics). We developed 43 arbitrary rules to improve consistency among coders, such as "Osteoporosis is endocrinology, but hormone replacement therapy is obstetrics and gynecology." Because almost all questions encompassed more than one topic, we assigned both a primary and a secondary topic. For prescribing questions—"What is the dose of amoxicillin for a 1 year old?"—we assigned "prescribing information" as the primary topic and the relevant specialty (pediatric infectious disease) as the secondary topic.

In developing the taxonomy of generic questions, we used a procedure similar to one described in a study of MEDLINE searches.[17] Questions with essentially identical structures ("What is the dose of atorvastatin?" or "What is the dose of metformin?") were placed into a single generic type ("What is the dose of drug X?"). First, six of us (J W E, J A O, M H E, G R B, B T L, and M L C) used a random sample of 100 questions to independently develop preliminary generic questions. One of us (J W E) combined these six schemes into a consensus taxonomy and modified it further as he coded all the questions. This taxonomy was then distributed to all of us to make further changes. After the final revision was approved by all of us, five of us (J W E, J A O, G R B, B T L, M L C) used it to code a different random sample of 100 questions. The purpose of this step was to measure the interrater reliability of the final taxonomy of generic questions, which contained 69 categories. Reported frequencies for all taxonomies are based on assignments by one of us (J W E).

Statistical analysis

Most analyses were descriptive. The κ statistic was used to determine the interrater reliability of the question taxonomies. We used liberal reliability criteria for the topic taxonomy: a match was recorded if either the primary or secondary topic assigned by one coder matched either the primary or secondary topic assigned by the other. We used the Kruskal-Wallis one-way analysis of variance and linear regression for continuous outcomes, such as the frequency of questions and the time spent answering them, and the χ^2 statistic and logistic regression for dichotomous outcomes, such as whether an answer was found. A two-tailed significance level of 0.05 was chosen, and all analyses were performed with a commercial software program (Stata; Stata Corporation, College Station, TX).

RESULTS

Demographic data

Of the 129 physicians invited, 103 (80%) agreed to participate. The average age of participants was 48 years (range, 31-87 years), and 23 were women. Twenty-one physicians were in solo practices, and 54 practiced in a rural area (town population, <30,000). Among the 83 physicians in group practices, the number of partners ranged from 1 to 10 (median, 3). Eighty physicians practiced in free-standing clinic buildings where family practice was the only specialty. Seven physicians were full-time faculty members, two at the University of Iowa College of Medicine and five in community residency programs. Typically, each physician had a private office and saw patients by rotating among two or three adjacent examination rooms. Each physician generally worked with a nurse, who measured and recorded vital signs, answered patient telephone calls, cleaned examination rooms, and assisted with procedures. The primary funding source for 90 of the physicians was fee for service. Patients were typically scheduled every 10 to 15 minutes.

The 103 participants saw 2,467 patients and asked 1,101 questions during 732 observation hours. After the exclusion of 323 questions recalled about patients seen before the observation period, each physician asked an average of 7.6 questions during the two half-days (3.2 questions per 10 patients seen). The average age of all patients was 39 years (range, 0-98 years), and 1,474 (60%) were female. Patients prompting physicians' questions were older than those not prompting questions (mean age, 43 vs 37 years; $P < 0.001$), and they were more likely to be female (64% vs 58%; $P < 0.05$). These age and sex differences were independent of each other in a multiple logistic regression. Older physicians saw more patients and asked fewer questions than younger physicians. For each 10-year increase in age, physicians saw 1.9 more patients ($P = 0.06$) and had 1.7 fewer questions ($P < 0.01$) per 10 observation hours.

Taxonomies

Topics

The most common question topics were drug prescribing (209 questions [19%]), obstetrics and gynecology (96 questions [9%]), and adult infectious disease (89 questions [8%]). The distribution of question topics tended to mirror the distribution of clinical problems seen. However, disproportionately more questions were about prescribing and disproportionately fewer questions were about health maintenance visits (annual adult and well-child examinations). Except for drug prescribing, most topics were not pursued. The 14 most common topics accounted for 899 (82%) of all questions. The κ statistic for the topic taxonomy was 0.91 (indicating "almost perfect" interrater agreement[18]).

Generic questions

The most frequently assigned generic questions were "What is the cause of symptom X?" "What is the dose of drug X?" and "How should I manage disease or finding X?" (table 1). Only queries about drug dose were routinely pursued. The 25 most common generic questions accounted for 887 (81%) of all questions. The κ statistic for the generic question taxonomy was 0.66 (indicating "substantial" interrater agreement[18]). Although most questions were unique, we found several questions repeated with essentially identical wording: "What is this rash?" (n = 22), "Is this a viral or a bacterial infection?" (n = 13), "What is causing the patient's abdominal pain?" (n = 11), "What is causing the patient's chest pain?" (n = 10), "What is causing the patient's fatigue?" (n = 8), "What is causing the patient's dysuria (urinalysis normal)?" (n = 5), "What is causing the patient's hives?" (n = 4), and "Should the patient be given prophylaxis for subacute bacterial endocarditis?" (n = 4).

Answers

During the observation period, answers to 702 questions (64%) were not pursued. Physicians said that they might pursue answers to 123 of these questions after the observation period. The commonest reason for not immediately pursuing an answer was that, after voicing some uncertainty, the physician thought that a reasonable decision could be based on his or her current knowledge (n = 148 [21%]). Physicians found answers to 318 (80%) of the 399 questions they pursued. As judged by the observer, most answers (n = 291 [92%]) directly answered the question posed, whereas 27 (8%) provided information related to the question without directly answering it.

Answers were obtained from 156 unique resources. The mean (SD) time spent pursuing an answer was 118 (169) seconds, and the median time (interquartile range) was 60 (115) seconds. Less time was spent pursuing answers to questions about prescribing than for other topics (74 vs 153 seconds; $P < 0.001$). Prescribing texts and human sources were most likely to provide an answer (table 2). Formal literature searches were initiated for only two questions.

DISCUSSION

Physicians in this study did not pursue answers to most of their questions, except those about drug prescribing. This

Table 1 *Ten most common generic questions asked by 103 family physicians**

Generic question	Questions asked†	Questions pursued‡	Questions answered§
What is the cause of symptom X?	94 (9)	8 (9)	4 (50)
What is the dose of drug X?	88 (8)	75 (85)	73 (97)
How should I manage disease or finding X?[‖]	78 (7)	23 (29)	19 (83)
How should I treat finding or disease X?	75 (7)	25 (33)	18 (72)
What is the cause of physical finding X?	72 (7)	13 (18)	6 (46)
What is the cause of test finding X?	45 (4)	18 (40)	13 (72)
Could this patient have disease or condition X?	42 (4)	6 (14)	4 (67)
Is test X indicated in situation Y?	41 (40)	12 (29)	10 (83)
What is the drug of choice for condition X?	36 (3)	17 (47)	13 (76)
Is drug X indicated in situation Y?	36 (3)	9 (25)	7 (78)

*Values are given as number (percentage).
†The percentage is the proportion of total questions asked (N = 1,101).
‡The percentage is the proportion of questions asked.
§The percentage is the proportion of questions pursued.
‖Not specifying diagnostic management versus treatment.

Table 2 *Information sources used by family physicians to find answers to 399 questions*

Information source	No. of times used (% of total)	Time spent seeking answers (seconds)* Mean (SD)	Median (IQR)	No. (%) of searches that were successful†
Human (such as physician, pharmacist)	161 (36)	109 (104)	68 (150)	127 (79)
Nonprescribing printed information (such as textbooks, journal articles)	143 (32)	100 (89)	70 (75)	75 (52)
Prescribing text	113 (25)	70 (66)	50 (60)	96 (85)
Printed information posted on walls	17 (4)	42 (34)	35 (45)	14 (82)
Computer application (such as CD Rom, Internet)	10 (2)	395 (552)	180 (210)	2 (20)
Total	**444 (100)**	**102 (137)**	**60 (90)**	**314 (71)**

IQR = interquartile range.
*Kruskal-Wallis test, with Bonferroni corrected *P* values, showed that the average time spent with nonprescribing print sources and computers exceeded that with prescribing texts ($P < 0.01$) or posted information $P < 0.01$). No other significant differences in paired comparisons.
†A χ^2 test using a 5 × 2 contigency table (with 4 *df*) was significant ($P < 0.001$).

result is consistent with a study of Oregon physicians in which an answer was pursued when the problem was perceived as urgent and when a definitive answer was thought to exist.[3] In that study, and in ours, physicians pursued only a few of their questions but found answers to about 80% of those pursued.[3,14]

In previous studies, the frequency of questions has varied widely and seems to depend on the setting, the definition of a "question," and the methods used to collect them.[8] We recorded 3.2 questions for every 10 patients seen. In other studies, this number has ranged from 0.7 questions per 10 patients in a private office setting to 57.7 questions per 10 patients on an inpatient teaching service.[2,8,19]

Our participants spent an average of less than 2 minutes pursuing an answer. In a study of questions asked by Missouri family physicians, MEDLINE searches by medical librarians took an average of 27 minutes per question.[15] Sackett and Strauss found that printed summaries of evidence could be provided at the point of care within 30 seconds but that computer applications were too slow and too bulky to be feasible in their hospital setting.[20] Although computers fared poorly in this and other studies,[6,9] improvements in their speed, portability, and user friendliness are making them more useful to physicians.[21]

Study limitations

Our taxonomies require validation in other settings because we studied a homogeneous group of physicians in a small geographic area. The presence of a researcher may have influenced the questioning behavior of the participants: some physicians may have been reluctant to reveal gaps in their knowledge, whereas others may have generated questions to please the observer. We tried to minimize these effects by assuring participants that there was no right number of questions and by developing the trust needed to reveal knowledge gaps. We did not ask participants to rate the importance or urgency of the questions.

CONCLUSIONS

Busy family physicians need bottom-line answers to their questions, and they need them quickly.[10,14,22] Evidence can be provided at the point of care, but it is most useful when it has been digested into quickly accessible summaries.[8,20,23] These summaries tend to reflect the perspective of research, emphasizing the performance characteristics of tests and results of clinical trials. We found that this perspective often did not mesh with the needs of family physicians. For example, when faced with a clinical problem, the physicians often asked what steps to take, without distinguishing between diagnostic and therapeutic steps ("How should I manage disease or finding X?"). We agree with those who say that physicians should frame their questions better,[4] but we also think that authors should frame their answers better. By learning what questions occur in practice, authors could provide more useful information, which could ultimately lead to better patient care.

We thank Sharon Kaschmitter, who helped collect the data; Jeff Dawson, who helped analyze the data; Dedra Diehl, who helped verify the references; and the 103 physicians who generously gave their time as participants.

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COMMENTARY

Excellent information is needed for excellent care, but so is good communication

The article by John Ely and his team has important implications for informatics researchers, developers of knowledge resources, health system managers, and physicians.

For researchers in medical informatics and others wishing to understand the information needs of physicians, the data reported by Ely and colleagues confirm consistent findings from studies of how physicians seek information. First, physicians have many questions about how best to care for their patients. Second, most of these questions are never pursued. Third, when physicians do pursue information, they are effective, finding answers about 80% of the time. Fourth, like information seekers in other domains, physicians prefer to get answers from human sources such as colleagues or from readily available printed material, such as drug compendia, clinical manuals, and textbooks.

To further our understanding of how physicians seek information, research should now focus on the following questions: How do we recognize when more information is needed? Improving our understanding of this process could lead to an increased awareness by physicians of their own information needs—the first step in the evidence-based medicine process of ask, access, appraise, and apply.

Why do we so strongly prefer to turn to one another for answers to our questions? The preference for human sources of answers is well established in virtually every domain that has been examined. Why is this the preferred means of resolving clinical problems? Should our efforts be directed at replacing this interaction or at facilitating and augmenting it?

Until now, it has been possible to use automated processes to identify the topics or concepts in a question, but not to address the specific purpose of the question. Using the novel taxonomy of generic types of questions developed by Ely and associates, developers of resources in medical knowledge should now be able to produce knowledge resources that automatically deliver information that is tailored to the clinical problem at hand.

For health system managers, planners, and policy makers, this article is a reminder that excellent clinical practice requires excellent information support. We know that medical knowledge is dynamic and expanding rapidly. We know that patient management is often complex, requiring that physicians integrate diverse, often conflicting, information with medical knowledge and patient data. We also know, from reports such as this one, that physicians routinely recognize that they need additional information to provide optimal care for their patients. We need health systems that can provide the resources and support necessary to help clinicians identify and meet their information needs.

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For physicians, the reality is that they will not have more time to pursue answers to their clinical questions. Still, the following strategies can be employed to improve the information support in practice.

- Learn the skills of evidence-based medicine, especially of searching the literature and appraising the evidence. The medical literature now contains better evidence, is better indexed, can be searched with better tools, and surprisingly, often contains better answers to primary care questions, especially questions about the benefits of specific treatments. And it is free and available to anyone with an internet connection.
- Surround yourself with the best information. Publishers are paying more attention to the validity of the information, its relevance to clinical practice, and the importance of making it highly accessible and useful to busy practitioners.
- Learn to delegate. Health care is increasingly team-based and multidisciplinary, and information support can be as well. Nursing or office staff, pharmacists, clinical librarians, medical students, and patients and their families can all play a role in finding and reviewing information to support patient care. Physicians need no longer be providers of information but can help patients and others select and interpret the abundance of health information that is now available.
- Integrate information support into the clinical process. Reminder systems, whether by paper or computer, can improve physicians' performance in preventive care and patient monitoring. Prescribing systems, whether in the physician's office or at the pharmacy, can help screen for drug interactions and provide patient education about drug therapy. Simple tools such as preprinted or computerized order sets or instruments to assess patients can improve adherence to current standards and guidelines.
- Expand beyond the limits of episode-based care. It's not practical to seek the best information for every decision. However, quality assurance, peer review, disease management, population-based care, pharmacy and therapeutics committees, and formulary decisions are a few activities to which a more evidence-based approach can be applied, improving the quality of the decisions made in these settings.

Finally, good health care requires effective communication and informed decision making between competent, caring health professionals and their patients. The challenge for all parties is to build information systems that support this process but do not get in the way of it.

Paul Gorman is Assistant Professor in the Division of Medical Informatics and Outcomes Research at the Biomedical Information Communication Center, Portland, Oregon

How medicine has changed

The healing power of mother's milk

I was due to give a talk entitled "Changes in medicine in 43 years of practice" when I attended the funeral of a patient a few weeks before the presentation. She was a sweet old lady of 96 years who had borne 10 children, and the church was filled to capacity. There were three generations of her family present. An elderly clergyman gave one of the eulogies. He related how as a young boy in the 1920s and 1930s he had been a next door neighbor of Ma Smith. In those days, he said, "We didn't have cars, or fridges, or telephones, we never went to the doctor, we didn't have antibiotics or any of the other wonderful medications they have now, and we didn't have health insurance. We only saw the doctor for a broken bone or if dying. Doctors in those days prescribed mustard poultices or the like and Mother knew all about those. One day, I got a sore eye. Mother said it was 'pink eye' and it needed warm milk applications. Sometimes we did not have the basics, and at the time we had no milk, so she sent me next door to see Ma Smith. I knocked on her door and when she came I told her my problem. She said, 'Look up and hold your eye open child.' I did so and she took out her breast and gave me a squirt."

Gordon M Black, Pembroke, Bermuda

capsule

Male adolescents may prefer to see female doctors We often assume that adolescents would prefer to be examined by a doctor of the same gender. But a study in Kansas City suggests the opposite (*Arch Pediatr Adolesc Med* 2000;154:49-53). The authors questioned 67 male adolescents attending a hospital clinic, a response rate of 83%. Of those who expressed a preference, most wished to see a female physician for both general and genital examination. Preference for a woman was greater in African American respondents, almost two thirds of whom has been raised by a single female parent, relative, or guardian.

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The science, medicine, and future of contraception

The prevalence of contraceptive use is increasing worldwide, and in many countries more than 75% of couples use effective methods.[1] Existing methods of contraception are not perfect, however, and their acceptability is limited by side effects and inconvenience. Even in developed countries where contraception is freely available, many unplanned pregnancies occur. Thus, there is a real need for new methods of contraception that are more effective, easier to use, and safer than existing methods. In this article, we discuss current research into new forms of contraception and predict what methods are likely to be used in the future.

SOCIAL INFLUENCES

Demographic forces, prevalence of disease, and social and cultural factors influence not only the use of contraceptives but also the development of new methods. The age of onset of sexual activity is falling, whereas childbearing is being delayed or, in many developed countries, forgone altogether. The public presses for more "natural products," which are perceived to be safer, but at the same time demands that contraceptives have almost perfect efficacy.

Those concerned with the development of new drugs and devices assume the need for efficacy and are now seeking positive health benefits—methods that prevent not only pregnancy but also sexually transmitted disease and, in the long term, common diseases such as breast cancer. Heterosexual intercourse is now the main route of transmission of the human immunodeficiency virus. Although barrier methods such as condoms reduce the risk of transmission, there is a pressing need for additional and complementary methods of protection in the form of topical virucidal agents that ideally would also be spermicidal.

HORMONAL CONTRACEPTION FOR WOMEN

Methods involving steroid hormones have dominated new developments in contraception, and in the past 40 years more than 200 million women worldwide have taken "the pill."[2] Recent data confirm its excellent safety, and in many respects the pill will be hard to beat. In the past 15 years, new developments in contraception have come mainly from tinkering with hormonal methods—new delivery systems (implants and hormone-releasing intrauterine devices), better progestogens, and lower doses of estrogen.

NEW DELIVERY SYSTEMS AND SELECTIVE RECEPTOR MODULATORS

In the early part of the 21st century, we will probably see the licensing of contraceptive vaginal rings, transdermal patches, and gels. In the longer term, selective modulators of hormone receptors will likely replace currently available estrogens and progestins to avoid their risks, particularly venous thrombosis, while reducing the incidence of common diseases such as breast cancer. Study of the molecular structure of hormone receptors has revealed that each ligand induces an almost unique conformational change and, hence, has slightly different biologic effects.[3] Therefore, organ-specific drugs, which produce the desired effect only on critical reproductive processes, will likely become available.

ANTIPROGESTINS

The most exciting development in the past 20 years has been the discovery of compounds that antagonize the action of progesterone. Progesterone is necessary for the establishment and maintenance of pregnancy. Key events—including ovulation, fertilization, and implantation—depend on the secretion of progesterone by the ovary at the appropriate time. It is nearly 20 years since the discovery of the first antagonist of progesterone (mifepristone), which was shown to interrupt pregnancy. The political controversy surrounding the "abortion pill" has im-

Predicted developments

Within 5 years

- New delivery systems of conventional contraceptives, such as vaginal rings, transdermal patches, and gels
- Contraceptives that also protect against sexually transmitted disease

Short term (<10 years)

- "Once a month" pill that inhibits implantation
- Antiprogestins used for estrogen-free, daily pill for women
- Orally active, non-peptide antagonists of gonadotrophin-releasing hormone for men and women

Long term (>10 years)

- Antagonists of follicle stimulating hormone receptor
- Arrest of spermatogenesis or sperm maturation
- Arrest of final maturation of oocyte, such as with phosphodiesterase inhibitors
- Inhibitors of follicle rupture

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peded research into other possible uses of these compounds, including contraception.

Some years ago, Glasier et al showed that a single dose of 600 mg of mifepristone was highly effective as an emergency contraceptive after unprotected intercourse.[4] The compound both inhibits ovulation and prevents implantation, properties which suggest that it could be used as a regular form of contraception. A daily dose of 2 to 5 mg (less than a hundredth of the dose required to induce abortion) inhibits ovulation and prevents the formation of a secretory endometrium.[5] Estrogen secretion by the ovary is maintained at the level of that found in the follicular phase of the menstrual cycle. Preliminary data suggest that most women are amenorrheic while taking the antiprogestin, which could be a considerable advantage over other forms of estrogen-free contraceptives, such as gestagen-only pills.

Antigestagens might also be used for "once-a-month" pills. If they are given in the early luteal phase of the cycle, the formation of a secretory endometrium is retarded without affecting the regular pattern of menstruation. In a pilot study of 21 women in Sweden who used this method as their sole means of contraception, only 1 pregnancy occurred in 153 menstrual cycles.[6] A major practical problem with this approach is the difficulty in detecting ovulation so that the pill can be taken at the correct time of the cycle. A once-a-month pill that prevented ovulation or implantation would be welcomed by many women from various countries and cultures.[7] In contrast, only a few women would be prepared to use a pill taken around the time of expected menses, when implantation of the embryo would already have occurred. In any case, current evidence suggests that mifepristone alone or in combination with misoprostol would result in too high an incidence of pregnancy to be useful as a regular method of inducing early menses.[8]

CONTRAGESTION

It has also been proposed that mifepristone could be taken only if the menses was overdue ("contragestion"). An inducer of a missed menses acts by disrupting an implanted embryo and induces an early abortion. A pilot study supported by the World Health Organization reported few ongoing pregnancies in women given a combination of mifepristone, 600 mg, and the prostaglandin analogue gemeprost, 1 mg, within 10 days of their expected menses.[9] Although this study showed "proof of concept," legal, political, and ethical issues make it unlikely that this approach would receive widespread acceptance. Moreover, in that study there was considerable variation in the timing of the onset of the next menses, which would make it difficult for women to decide whether to take the pill again in subsequent cycles. For those women who find it ethically acceptable, a pill that induced missed menses might be more attractive than a monthly pill to induce early menses, perhaps because it would be required only 2 or 3 times a year.

HORMONAL CONTRACEPTION FOR MEN

Evidence from different countries and cultures shows a growing demand for more effective and convenient methods of contraception for men.[10] A recent survey in Scotland, South Africa, Hong Kong, and China found that most men would consider using a "male pill." Although it has been known for nearly 50 years that azoospermia can be induced by the administration of large doses of testosterone, progress in the development of hormonal male contraception has been slow for several reasons. The supraphysiologic dose of androgen required to induce azoospermia causes adverse effects, including prostatic hypertrophy and unfavorable changes in plasma lipid levels, precluding wide-scale use in otherwise healthy men.[11]

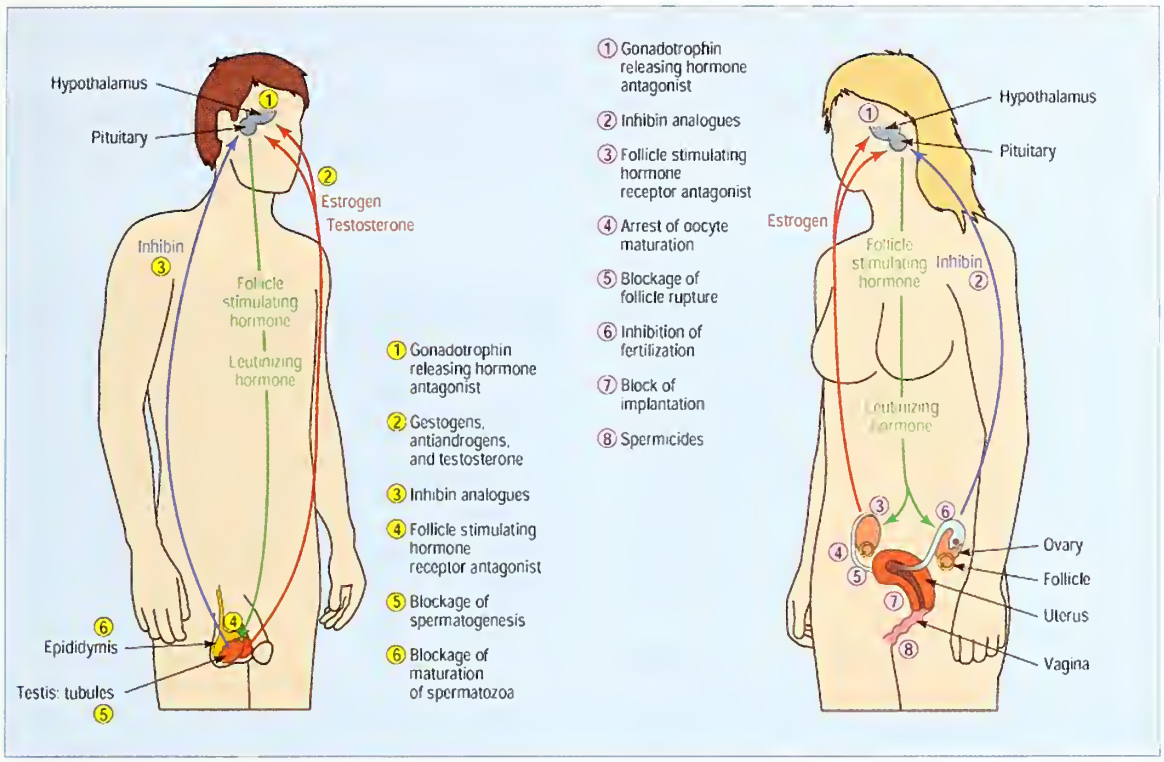
Current research, therefore, focuses on lower physiologic doses of androgen in combination with gestagens (such as desogestrel and cyproterone acetate) or gonadotropin-releasing hormone antagonists.[12] Orally active nonpeptide antagonists of gonadotropin-releasing hormone or a depot preparation could provide a practical method of suppressing gonadotropins in combination with androgen replacement. However, no convenient, safe preparations of androgen currently exist for replacement therapy, although this is the subject of research by several pharmaceutical companies. Encouraging progress is being made in the development of new androgens (such as 7α-methyl nortestosterone) that have possible health benefits and in new methods of long-term delivery of steroids in implants (such as Implanon).[13] The development of a safe, acceptable treatment that is as effective as the combined oral contraceptive pill for women (Pearl index [measure of effectiveness] 1/100 woman-years) is at least 5 years away.

BEYOND 2010

In the long term, there are several possible approaches for contraception in men and women (figure).[14]

Meiotic arrest

In both sexes, the formation of gametes (spermatogenesis and oogenesis) involves the process of meiosis, whereby the number of chromosomes in a diploid nucleus is halved to the haploid state by cell division. Meiosis occurs only in germ cells, and hence, substances that interfere with meiotic division should be specific for the gonad. Specific genes are expressed at different stages of spermatogenesis,



Potential targets for contraception in men and women

and antagonism of their products (such as activin) could lead to sterility.

In the female, meiosis is almost completed during fetal development, but the final stages of meiotic division are delayed into adulthood, until just before ovulation. If we knew the mechanism by which meiosis was arrested in the oocyte, it might be possible to activate a similar mechanism to inhibit spermatogenesis in men. The arrest of meiosis in the oocyte involves at least 1 protein specific to germ cells (c-Mos), which is also transcribed in the male during meiosis. A high concentration of adenosine 3′,5′-cyclic monophosphate (cyclic AMP) is apparently important in preventing final maturation of the oocyte, and specific inhibition of phosphodiesterase 3 (the enzyme that catalyzes the breakdown of cyclic AMP) is contraceptive in rats, preventing the oocyte from acquiring developmental competence.

Blockage of follicle-stimulating hormone

Blocking the follicle-stimulating hormone receptor or inhibiting the secretion of follicle-stimulating hormone with analogues of inhibin will interfere with spermatogenesis, although whether sperm production can be maintained by testosterone alone in men, as it can in rodents, is not known. A minimum concentration of testosterone within the testis is probably required for spermatogenesis, so that inhibitors of androgen synthesis or action will be contraceptive. The key to the successful use of these approaches is again specificity. It may be possible to use the follicle-stimulating hormone receptor as a target to deliver another agent specifically to the testis.

Mutations of the follicle-stimulating hormone receptor have been described in women who present with primary amenorrhea due to a lack of follicle development. Inhibitors of follicle-stimulating hormone synthesis or action could prevent fertility but would require estrogen replacement to prevent the consequences of hypoestrogenism. Arresting final maturation of the oocyte before ovulation or follicle rupture would be a desirable method of contraception that did not disrupt the endocrine events controlling the ovarian cycle.

Preventing implantation

Progesterone induces the transcription of various endometrial gene products involved in implantation—for example, leukemic inhibitory factor, calcitonin, vitronectin, $\alpha_v\beta_3$ integrin, and $\alpha_4\beta_1$ integrin.[15,16] Specific antagonists of these products would be promising as new contraceptives because they should act only at the uterus.

The formation of new blood vessels (angiogenesis) is usually restricted in adults to the repair of injury, but in the ovary and uterus extensive angiogenesis occurs each

month during the formation of the follicle, corpus luteum, and endometrium. A potent antagonist of vascular endothelial growth factor prevented pregnancy in mice without producing major adverse systemic effects in the long term.[17]

Immunization

Other likely targets for new contraceptives are proteins involved in fertilization.[18,19] The sperm attaches to the egg through the interaction of specific antigens on the sperm surface with the zona pellucida proteins of the egg (such as ZP3). Immunizing female monkeys with zona pellucida proteins prevents pregnancy, but unfortunately produces a form of autoimmune oophoritis with loss of oocytes and premature menopause. Unforeseen consequences resulting from autoimmunity are a potential hazard of antifertility vaccines. Immunization of women against sperm antigens should avoid such problems, but research is still at the initial stages.[20]

Another possibility is disrupting the synthesis or delivery of proteins such as fertilin that are important for the function of sperm membrane, thus leading to incompetent spermatozoa. Interfering with the final maturation of spermatozoa has the attraction that it would result in sperm that were incompetent to fertilize an egg without running the risk of producing genetically mutated germ cells. However, concerns have been raised about the possible misuse of contraceptive vaccines, particularly if they are not fully reversible.

Because of these political concerns and doubt about the long-term consequences of immunization, there is little commercial enthusiasm for further development of this approach despite the scientific potential.

CONCLUSIONS

Compared with many drugs, the development of a new contraceptive product is expensive and relatively high risk. The pattern of contraceptive use is unlikely to change radically in the next 10 years. No one method will be suitable for everyone, and personal preferences will probably change through each reproductive life. In the next 5 years, more sophisticated systems for the delivery of steroid hormones, through or under the skin and into the uterus, will extend the range of options available. In 5 to 10 years, new steroid antagonists such as antiprogestins will replace some current contraceptive methods, such as gestagen-only pills, and probably lead to new approaches like a once-a-month pill. By 10 to 15 years, the dream of an effective, safe male pill will probably become a reality, shifting the burden of responsibility for contraception more equally between men and women. Only then will women have truly achieved "the fifth freedom"—freedom from the burden of excessive fertility.[21]

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Best Practice

EVIDENCE-BASED CASE REVIEW

Should we look further for cancer in a patient with venous thromboembolism?

Objectives

- To show how disease probability can be used to guide clinical decisions
- To learn what proportion of patients with venous thromboembolism will have occult cancer at presentation and in what proportion cancer will develop
- To learn which types of cancer are commonly found in patients with venous thromboembolism

A 71-year-old woman with venous thromboembolism was referred to us to determine whether a workup for cancer was indicated. She had been hospitalized because of deep venous thrombosis of her left leg and pulmonary embolism; she had no history of venous thromboembolism or cancer. For the past few months, she had the feeling of being "full" before she had eaten much but had no other constitutional or gastrointestinal symptoms. On physical examination, she was found to be obese (body mass index*=33), and there was fibrocystic nodularity in both breasts. She also had a trace of symmetric edema in her ankles. Laboratory test values showed mild normocytic anemia, but routine chemistry test results were normal, as were those of her liver function tests, urinalysis, activated protein C resistance, proteins C and S and antithrombin III concentrations, antiphospholipid antibody, and a chest film.

OUR QUESTIONS

We quickly developed 2 questions that we hoped to answer before advising about the patient's care. Of patients with venous thromboembolism without a history of cancer, what proportion have occult cancer that could be detected either at the time the venous thromboembolism was diagnosed or in a short follow-up period? In these same patients, what types of cancer are found?

*The body mass index is calculated as weight in kilograms divided by the square of the height in meters: weight (kg)/[height (m)]^2.

SEARCHING FOR EVIDENCE

We searched MEDLINE from 1966 through August 17, 1998, using the following search items: pulmonary embolism, thromboembolism, thrombophlebitis, venous thrombosis, deep venous, venous thromboembolism, trousseau, neoplasms, occult neoplasms, occult cancer, occult malignancy, and paraneoplastic syndromes. This search strategy identified 494 articles. We reviewed these articles first by title and then by abstract, yielding 5 reviews, 22 original articles, and one letter.[6-28]

APPRAISING THE EVIDENCE

Of the 5 review articles identified, 2 were traditional reviews without reference to how their data were located or validated.[1,2] The 2 meta-analyses used trials that included patients who were known to have cancer at the time they were diagnosed with venous thromboembolism.[3,4] This would be expected to result in an overestimation of the incidence of occult cancer in patients with venous thromboembolism. Thus, we were unable to use their data to answer our questions. The decision analysis was designed to assess the effectiveness and cost-effectiveness of strategies for investigating patients for a diagnosis of cancer, and these were not our questions.[5]

We then appraised the 23 original cohort studies, using the criteria shown in table 1. The methods of these studies varied considerably. Only 7 studies met enough criteria to be included in our final analysis.[6-12] Of these, 3 studies did not use a standardized diagnostic workup to test for occult cancer,[6,8,10] and 2 studies did not consistently ap-

Table 1

Validity criteria
Excluded known cancer at the time venous thromboembolism was diagnosed
Objective diagnostic criteria used to document venous thromboembolism
Consistent diagnostic workup used to screen for cancer
Objective diagnostic criteria used to document cancer
Follow-up was for at least 1 year
Cohort selection appeared free from bias

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Summary points

- Based on the research evidence we found, the incidence of detectable malignancy at the time of a diagnosis of venous thromboembolism is between 1.9% and 7.5%
- We estimated our threshold for testing for occult cancer in this patient to lie between 2% and 4%; therefore, we suggested selected testing
- The types of cancer most commonly found in patients with venous thromboembolism were colon, prostate, lung, hematologic, breast, ovarian, skin, and liver
- After selected testing failed to identify occult cancer, our patient's probability of occult cancer was now below our threshold for further undirected testing

ply their diagnostic workup to all patients.[11,12] Only 3 studies reported objective diagnostic criteria for documenting cancer.[6,9,10]

SUMMARIZING THE EVIDENCE

The data from the 7 studies we selected are presented in table 2.[6-12] The patient populations were similar, with mean ages between 56 and 65 years, and 44% to 55% were women. The settings were all tertiary referral centers. In 4 studies, cohorts were divided into patients with idiopathic and those with secondary causes of venous thromboembolism[7,9,11,12]; however, each of these defined secondary venous thromboembolism differently. Because this made comparisons difficult, we combined all patients with idiopathic and secondary venous thromboembolism for our analysis.

These data suggest that the incidence of detectable malignancy at the time of a diagnosis of venous thromboembolism is between 1.9% and 7.5%. Thus, if we assume that no cancer would be detected without an evaluation by a physician, between 13 and 50 patients with venous thromboembolism would have to be evaluated for 1 case of occult malignancy to be detected. The incidence of malignancy being detected during follow-up for venous thromboembolism is between 1.2% and 17.8%. Thus, between 6 and 83 patients with venous thromboembolism would need to be evaluated for 1 case of malignancy to be detected in follow-up. The heterogeneity of the reported incidence is likely due to variations in the diagnostic strategy used to detect occult cancer and differences in length of follow-up. For example, Bastounis and co-workers[11] report a higher incidence of cancer at the time of a diagnosis of venous thromboembolism than did Prandoni and colleagues.[9] However, Bastounis and associates used a

Table 2 *Studies that met validity criteria*

Study and year	Design	Patients with cancer found after a diagnosis* of venous thromboembolism, No. (%)	Patients with cancer found in follow-up after a diagnosis of venous thromboembolism,† No. (%)	Mean length of follow-up, mo	Diagnositic strategy used
Gore et al, 1982[6]	Retrospective	4/88 (4.5)	15/84 (17.9)	ca 24‡	Not standardized
Aderka et al, 1986[7]	Prospective	NA	14/83 (16.9)	42	ESR, CBC , smear, chemistry panel, fibrinogen, prothrombin time, chest x-ray, and stool occult blood
Goldberg et al, 1987[8]	Retrospective	NA	22/370 (5.9)	30	Not standardized
Prandoni et al, 1992[9]	Prospective	5/260 (1.9)	13/250 (5.2)	80	ESR, CBC, chemistry panel, liver function tests, urinalysis, and chest x-ray
Nordstrom et al, 1994[10]	Retrospective	NA	150/1,383 (10.8)§	ca 42‡	Not standardized
Bastounis et al, 1996[11]	Prospective	22/293 (7.5)	7/264 (2.6)	24	CBC, ESR, chemistry panel, liver function tests, serum protein electrophoresis, urinalysis, CEA, and chest x-ray with or without abdominal CT scan
Monreal et al, 1997[12]	Retrospective	26/685 (3.8)	8/659 (1.2)	16	ESR, CBC, smear, liver function tests, serum protein electrophoresis, lactate dehydrogenase, CEA, prostate specific antigen, chest x-ray, abdominal CT scan or abdominal sonogram

ca = circa; NA = data not available; CT = computed tomography; ESR = erythrocyte sedimentation rate; CBC = complete blood count; CEA = carcinoembryonic antigen.
*Included only patients with cancer found at the time venous thromboembolism was diagnosed or within first month after idiopathic or secondary venous thromboembolism.
†Includes only patients with cancer diagnosed at least 1 mo after idiopathic or secondary venous thromboembolism.
‡Studies did not report mean length of follow-up.
§Study may include patients with cancer diagnosed within first month after venous thromboembolism.

more extensive diagnostic strategy, which may have detected more cases of occult malignant neoplasm. In addition, the studies that report longer follow-up periods also report a higher incidence of cancer in follow-up after a diagnosis of venous thromboembolism. The correlation between venous thromboembolism and cancer may be called into question at these longer periods of follow-up, however.

The types of cancer found in the 7 studies and their proportion are presented in table 3.[6-12]

USING THE EVIDENCE

In the absence of research evidence and of a formal threshold analysis, we could not confidently place our threshold for testing on the probability scale. Nonetheless, we estimated it to be between 2.0% and 4.0%; above this figure, we would search for selected causes. We reasoned our threshold should be as low as 2.0%, given how serious and how potentially treatable some of these cancers are. We were surprised to learn that our patient had between a 1.9% and 7.5% probability of having detectable occult malignancy. This incidence of cancer fell above our threshold for testing; thus, we recommended selected testing. Based on the data on the types of cancer found in this patient population, we expected the most common cancers to be detected using screening techniques that were appropriate to this patient's age.

The patient underwent a breast examination by a physician, pelvic examination, cervical smear, mammography, and flexible sigmoidoscopy. The results of these tests did not suggest evidence of malignancy. A complete blood count was repeated, and the mild normocytic anemia had resolved. Because our patient had early satiety, we recommended an upper endoscopy; however, she elected to undergo a barium upper gastrointestinal series, the results of which were normal.

Table 3 *Incidence of cancer by site*

Site	Total no.	(%) of patients
Colon-rectum	44	(15)
Prostate	38	(13)
Lung	30	(10)
Hematologic	18	(6)
Breast	17	(6)
Ovarian	14	(5)
Skin	12	(4)
Liver	10	(4)
Miscellaneous	103	(36)
Total	286	(99)

The normal results of these tests served to further lower the patient's probability of having occult malignancy, and it was now below our threshold for further undirected testing. We discussed this with the referring physician and the patient, and they agreed.

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A Book To Make You Think

Assuming the Risk: The Mavericks, the Lawyers, and the Whistleblowers Who Beat Big Tobacco by Michael Orey, Little Brown, 1999, $24.95

While the US tobacco industry settled the mammoth tobacco suits lodged by the 50 US states, elsewhere in the world the tobacco giants continue their denials and questionable marketing practices seemingly oblivious. From this perspective, the events described in Michael Orey's book seem more like a minor skirmish on the edge of the tobacco control movement than a victory for the combined forces of governments and the public health community. Keeping in mind this minor quibble, *Assuming the Risk* is a tremendously readable and interesting book. Like the fictional novels of John Grisham, it is the characters who drive much of the book's plot.

As with most events that change the course of a movement, the US Master Settlement Agreement truly began years earlier in a small and poor county of the poorest state in the United States. Thus, starting with the Willie Horton case, which would serve as the linchpin and common reference point for the proceedings that followed, readers are led through the many cases and events that would culminate, years later, with Mississippi's decision to file suit against the US tobacco industry, a move subsequently followed, probably most notably by Minnesota, by the remaining 49 states. As Orey proceeds with his discussion, readers are introduced to a growing cast of characters, their every personality quirk and foible apparently disclosed by the author. Thus we are told of Merrill Williams' quasi-neurotic tantrums, Jeffery Wigand's difficult temperament, and Mike Moore's career-long determination to do good, as well as many other thumbnail portraits.

Where Orey leaves readers wanting is in not discussing the merits of the US states' litigation-driven strategy. Is the $246 billion Master Settlement Agreement really a victory for public health? People are now questioning whether any deal made with the tobacco industry can ever be consistent with the interests of public health. While discussing the role of Congress in legislating the first multi-state agreement, Orey never addresses the apparent lack of coherence exhibited by US politicians on the issue of tobacco control. After reading this book, you get the feeling that the US public and politicians feel that no further legislative or regulatory action is necessary now that the tobacco industry has been forced to pay.

Perhaps one cannot fault Orey for sticking to what he does best, which is describing the situations, the people, and the maneuvering that lead to US tobacco's first major setback. Written in a journalistic style that eschews legal jargon in favor of plain language, this book will be of most interest to those outside the legal profession. If not a must read, at least a good read.

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On the Cover

The photograph on the cover of this issue of *wjm* is the work of Douglas S Diekema. Dr Diekema is a pediatric emergency medicine physician and director of medical ethics at Children's Hospital and Regional Medical Center in Seattle, Washington. When not caring for patients or teaching at the Unversity of Washington School of Medicine, he enjoys photography and hiking.

TOPIC IN REVIEW

Simplifying physicians' response to domestic violence

Physicians are called on, through guidelines such as those published by the American Medical Association in 1992,[1] to play a large role in identifying, intervening in, and following up on cases of partner abuse. Yet, even the first step of intervention, screening, is difficult for most physicians. Victims are still not asked about abuse in their relationships and are not receiving the health care they need.[2-11]

Physicians want to help victims of domestic violence but face complex barriers to doing so. One way to increase physicians' effectiveness in this area is to clearly define and limit their role in intervening with victims.

METHODS

The model we suggest here was developed from the literature on domestic violence and health care, our collective experiences teaching domestic violence intervention to medical students and practicing physicians, and our recent research with physicians who intervene with victims and with survivors who have been helped by physicians.[12-16] To locate relevant literature, we conducted MEDLINE searches with the key word "domestic violence," followed by "guidelines," "screening," "intervention," and "barriers." We focused on research published following the publication of the 1992 guidelines for physicians regarding domestic violence intervention.[1]

INCREASING EFFECTIVENESS BY FOCUSING PHYSICIANS' ROLE

We propose limiting physicians' tasks to the following 4 areas, using the acronym AVDR: *a*sking patients about abuse; *v*alidating the message that battering is wrong and confirming the patient's worth; *d*ocumenting presenting signs, symptoms, and disclosures; and *r*eferring victims to domestic violence specialists. Within this limited role, physicians provide medical care but rely on community or in-house experts on domestic violence to do most of the intervening.

HOW AVDR WORKS

Asking

When physicians routinely ask about domestic violence, they are successfully fulfilling a major part of the intervention, regardless of what the patient discloses. Screening sends the message that battering is wrong and is a health care issue. Physicians with expertise in domestic violence say that they normalize domestic violence by including it among other safety questions—for example, the use of seat belts and gun safety—and by saying or implying that they routinely ask all their patients about domestic violence.[12]

Summary points

- Defining and limiting physicians' role in intervening with victims of domestic violence increases their effectiveness
- Physicians should *a*sk patients about abuse; *v*alidate that battering is wrong; *d*ocument signs, symptoms, and disclosures; and *r*efer victims to domestic violence specialists (AVDR)
- With this approach, physicians' time in providing patients quality care is greatly reduced
- An AVDR approach to domestic violence could be integrated into managed care delivery systems
- Universal screening, identifying risk factors, validating patients, and documenting abuse will help prevent further abuse
- We are all responsible for solving the problem of domestic violence

Making the question a normal part of the history taking helps physicians reduce their own and patients' discomfort with screening for domestic violence.

Experienced physicians and advocates advise that physicians always ask about abuse in a private, confidential setting, using nonjudgmental tones and language. Family members should never be used as translators. Physicians need to develop their own way of asking patients about abuse. "How are things at home?" is a standard screening question that can be embedded in other questions on safety and used as an opening to more specific questions about abuse. Here are some examples of how to ask the questions:

> The next questions are about safety. Do you remember to wear seat belts? Is there anything particularly stressful going on now? How are things at home?
>
> Domestic violence can be a problem in many people's lives, so I now ask every patient I see about safety in their relationships.
>
> I see patients in my practice who are being hurt or threatened by someone they love. Is this happening to you? Has this ever happened to you?

Adding one question about domestic violence to the routine health assessment is an important first step in improving health care for victims[17] and for teaching people that partner abuse is a public health problem.

Validating

When asking patients about domestic violence, physicians need to acknowledge that battering is wrong. They need

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Christopher Pfuhl/AP

Physicians often face complex barriers to helping victims of domestic violence

to also confirm their patients' worth. Clear, validating messages include compassionate statements that take the blame off the victim: "You didn't cause this; it isn't your fault." "You do not deserve to be hit or hurt, no matter what happened." "I am concerned about your safety and well-being."

Physicians should periodically revisit the topic of domestic violence, expressing concern for the patient's health and safety and offering hope for the future.

Validation does not depend on direct disclosure by the patient. Survivors report that validation helps them even when they have not directly disclosed the abuse and the health care professional has not directly identified the abuse.[13] One survivor reported that she and her health care professional danced around the issue of abuse, but that the health care professional still provided validation by being nonjudgmental and caring:

> She [the health care professional] helped me realize that I was not alone, that no matter how well I thought I was hiding it [the abuse], I wasn't hiding it, that I may as well just say the words because people knew anyway. She is the only health care provider who did that. It was one more drop of water in the bucket until it was spilling over, so in that way it helped me a lot.

Documenting

Physicians must document the presenting signs and symptoms of abuse as well as any disclosures about the abuse by the victim. The organization Physicians for a Violence-free Society[18] recommends that notations in the medical record be specific and detailed and that physicians ask patients for specific names, locations, and witnesses. The victim's direct words should be denoted with quotation marks; a patient's own words, especially those that contain names, places, and specific behaviors, carry more weight in legal cases than physicians' summary statements. For example, "My husband, John Doe, kicked me and pushed me down the stairs last night" is better than "aggravated assault."

The physician may need to complete body maps and take photographs to document specific injuries. Cameras that develop pictures instantly should be readily available in all health care settings because pictures offer an inviolable record of the abuse. The process of documenting abuse can serve to validate the patient if accompanied by genuine, nonjudgmental statements of concern.

Referring

Physicians should refer patients who have been abused to community advocates or on-site specialists. Physicians working in group or solo practices with no resources on site could refer the patient, as the last part of the health care visit, to an advocate for victims of domestic violence at a local agency, shelter, or hot line. Ideally, physicians would have access to trained advocates or dedicated staff, health educators, or social workers available on site or on call around the clock. These specialists would take complete histories of the abuse, thoroughly document additional disclosures of the abuse, maintain the medical record, assess for safety and develop a safety plan if indicated, refer to community services, develop a follow-up plan, report to the police if required to by state law, and inform the physician about all interventions. If the identifying physician is the patient's primary care physician, he or she would follow up on domestic violence as a health issue in the patient's life and provide ongoing validation to lay the groundwork for change. Change should take place at the patient's pace.

This referral approach is the same as referring a patient to a specialist for the treatment of a physical condition. Physicians with expertise in domestic violence report that when they directly connect the victim to an on- or off-site domestic violence specialist, they "feel relief" and are reassured that the patient will receive the additional services needed. If the patient is not ready to speak with a specialist in domestic violence, the physician must offer the patient telephone numbers for referrals[19] and try to assess her immediate safety needs.[20]

REDUCING BARRIERS FOR PHYSICIANS

Physicians report that they do not intervene with victims because of lack of time, lack of education in domestic violence, lack of knowledge of legal issues, cultural barriers to communication, and patients' perceived unresponsiveness.[6,11,21,22] Sugg and Inui[23] interviewed primary care physicians and found that they likened a discussion of domestic violence to "opening Pandora's box." Their analysis suggests that talking about partner abuse with patients makes physicians fearful and uncomfortable and threatens their role as a competent professional. Physicians also report that major barriers to identifying domestic violence cases come from battered patients' silence about the

abuse and their reluctance to disclose it.[24-26] Patients report that they do not disclose because of fear of their partner's retaliation, shame, humiliation, denial, and a belief that health care professionals cannot do much to help them.[14,27,28]

With the AVDR approach, the time required of physicians—compared with that required by current recommendations—to ensure that battered patients receive quality care is greatly reduced. In addition, physicians do not need extensive training in or knowledge about domestic violence. Universal, routine screening, proposed as part of the asking and validating process, relieves physicians of the responsibility for determining whom to screen for domestic violence and thus reduces cultural barriers, personal discomfort, and the fear of offending patients. We agree with Chez and Jones,[29] who suggest that only with universal screening will physicians become more comfortable with questioning their patients about partner abuse.

With a specialist providing the necessary care, physicians may avoid the fear or frustration arising from their inability to fix the problem quickly. Some physicians with expertise in this area report having reframed their role in helping victims: "I've let go of having to fix or cure or even know if it's really happening."[12] Warshaw[30] pointed out that working as a member of an advocacy team empowers physicians and enhances their feelings of self-efficacy.

AVDR COMPLEMENTS CURRENT HEALTH CARE TRENDS

An AVDR approach could be integrated into managed care systems. Universal screening, identifying risk factors, validating patients, and documenting abuse put the physician in a proactive role and aim to prevent further abuse. As recently proposed by Salber,[15] specialists in domestic violence could be advocates who market themselves as vendors of services for managed care organizations.

CONCLUSIONS

Physicians have a crucial role in the health care system's response to domestic violence. A physician may be the only health care professional a battered person sees, and all physicians see patients who have been battered. We suggest that the inadequate response of many physicians to domestic violence is due in large part to unrealistic expectations. The AVDR approach sends a clear message to overwhelmed physicians and the health care system: it is not physicians' responsibility to solve the problem of domestic violence; it is all of our responsibility. We hope this approach contributes to the evolution of the health care system's response to this pervasive public health problem.

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Culture and Medicine

Is globalization dangerous to our health?

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When asked about globalization, Margaret Thatcher, the former Prime Minister of Great Britain, replied, "There is no alternative." Her reply was shortened to "TINA," which some people think is a newly discovered law of nature. Yet, public resistance to this new corporate-centered trade is increasing. What relevance does this have to American physicians? Does globalization affect health?

Many think about the health effects of modern global trade as involving increased pollution as corporations strive to limit environmental restraints or global warming caused by the increased reliance on cheap fossil fuels. Others focus on the changes in diet produced by genetically modified foods or the increase in the tobacco market penetration. The expansion of global cigarette exports is a dramatic example, totaling 223 billion (10^9) cigarettes in 1975 and rising to 1.1 trillion (10^{12}) cigarettes in 1996 (a 5-fold increase). Others might consider the health of child laborers in Pakistan who produce many of the disposable surgical instruments that are increasingly used in US hospitals. Or they might consider deaths from toxic exposures in poor countries as US corporations evade environmental restraints at home. One such example occurred 15 years ago in Bhopal, India, where 5 tons of poisonous methyl isocyanate gas leaked into the air from a Union Carbide pesticide plant, killing more than 3,000 people.

These effects are real, but they pale in comparison with globalization's effect on increasing inequality, the most powerful factor affecting population health and responsible for perhaps 14 to 18 million deaths a year (18% of total deaths) worldwide. [1]

DANGERS OF HIERARCHY IN HEALTH

To understand this factor, we need to recognize that the health of the US population is disgracefully poor compared with that of other rich countries. In the ranking of countries by life expectancy in 1997, the United States stood 25th, behind all the other rich countries and even a few poor ones.[2] The country that has won the gold medal in this "health Olympics" every year since 1977, Japan, is also tied for the gold medal in the "smoking Olympics." That is, the prevalence of smoking in Japan is tied with that in China as the highest in the world and 3 times that of the United States; yet, the Japanese do not die of smoking-related diseases to the extent that Americans do. Lung cancer mortality rates in Japan are one half to one third of those in the United States. How does Japan do it?

The answer is simple. The health of populations in rich countries is determined primarily not by the health care system—we have the most sophisticated and expensive, so it cannot be that—or by individual risk factors such as smoking, but rather, by the gap between the rich and the poor. Many recent studies show that populations with a greater income hierarchy are less healthy, and specifically have shorter lives, than populations that are more equitable.[3] These studies have looked at mortality and income distributions among countries, within countries such as each of the 50 US states, and within 282 standard metropolitan areas (US cities). They have also looked at homicide rates, teen births, and specific diseases. Independent investigators have studied many different populations using different methods, and all agree: the strongest factor affecting health is the size of the gap between the rich and poor. Other studies suggest physiologic mechanisms through which greater hierarchy results in worse health and posit that humans are by nature egalitarian.[4-6] The analysis has the same level of validity as the relationship between smoking and lung cancer, using the criteria postulated in this country by the Surgeon General's report in 1964. (The data and scientific analyses can be seen at http://depts.washington.edu/eqhlth.)

Summary points

- Determinants of population health differ from those affecting individual health
- Population health in rich countries is determined primarily by the size of the gap between rich and poor
- The United States ranks behind all other rich countries and a few poor ones in health outcomes such as life expectancy
- Globalization, or corporate-centered trade, increases the gap between the rich and poor within and among countries
- Policies that promote substantial corporate subsidies and increase the rich-poor gap can be changed to improve population health

THE WEALTH AND INCOME GAP

The United States has the greatest wealth and income gap of any rich country, which is the main explanation for its dismal health ranking among developed countries. We did not always fare so poorly: in 1960, we were 13th.[7] As our wealth and income gap have grown,[8] so has our distance from the healthiest country. After the second world war, Japan restructured its economy to be egalitarian. Today, during its economic crisis, managers and chief executive officers are taking cuts in pay rather than laying off workers, something that is inconceivable in the United States

(Market Reform for Economic Survival: "Constancy and change in Japanese management," *Japan Echo* 1999 April;26:26-28).

Most countries in the world are poor, with most people subsisting to produce their own food, often supplementing their income by sending family members to cities to work in factories or abroad and sometimes by engaging in illicit commerce. In some countries, such as Nigeria with its oil riches, immense wealth lines the pockets of only a few people. In poor countries, the evidence suggests that equitable development that focuses on providing basic needs is the route to improving the population's health.[9,10]

THE PROBLEMS WITH CORPORATE-CENTERED TRADE

In the past 1 or 2 decades, world trade could be more accurately described as trade that is corporate-centered. This change began in the mid-1970s and was boosted by the economic policies of Thatcher in Great Britain and Ronald Reagan in the United States. Today the dogma governing economic activity, deemed the "Washington consensus," is founded on the principle that the market knows best and should govern the world.[11] The implicit assumptions are that economic transactions involve a buyer and a seller who are on an equal footing and that the price accurately reflects the cost. The influence of indirect subsidies in tipping the scales is overlooked, as shown by countless examples. In 1995 Boeing, one of this country's largest exporters and most successful corporations, received a tax credit of more than $33 million. In 1999 Microsoft, another highly successful company, increased profits by 71% in 1999 over the previous year, yet paid $226 million less in federal tax.[12] "Flexible taxation" is just one of the many ways in which the public subsidizes economic activity. Of the world's 100 largest corporations, 20 would have gone bankrupt without such assistance.[13]

Pascal Guyot/AFP

Bill Gates of Microsoft: his company enjoys "flexible taxation"

This so-called free trade in poor countries has produced great wealth for multinational corporations and provided low-wage jobs that keep many people in poverty. Among countries, the gap between the richest and the poorest fifth was 3 to 1 in 1827, rising to 30 to 1 in 1960, to 60 to 1 in 1990, and to 76 to 1 in 1997.[2] Recent studies have shown that where there is increased penetration of foreign investment in poor countries, slower economic growth and greater inequality result.[14-17] Global economic greed is the problem.

But what of the effects of global trade in rich countries? In the past 25 years, during which globalization has become common parlance, most people in the United States have seen a decline or stagnation in incomes after adjusting for inflation. This has come during a period of record profits for corporations and a booming stock market. According to economist Edward Wolff, 95% of American households had a decline in their net worth from 1983 to 1995.[18] The United States has begun to look more and more like a third world economy, with a fabulously wealthy elite few surrounded by a mass of people not sharing in the globalized pie. The top 1% of families in this country holds more than 40% of the wealth.

What are the population health effects of corporate-centered economic policies? In rich countries, capital (material wealth, monetary, and other) is abundant, whereas in poor countries, labor is plentiful. Production moves to poor countries where labor is cheapest. Free trade in goods and services leads businesses to produce goods that are capital-intensive in high-wage countries but labor-intensive in poor ones. Benefits from trade and investment generally flow to the rich countries rather than to poor ones, and thus, income inequality among countries is increased.[19] Within poor countries, more people have been displaced from their subsistence economies than have been able to find jobs in the manufacturing sectors in overcrowded cities.[20] In poor countries, as an elite profits immensely from this shift, the income gaps in those countries increase. In rich countries, the demand for labor is lowered, wages become relatively depressed, and income inequality increases.[17] For most of the world's people, it is a lose-lose situation.

Deshakalyan Chowdhury/AFP

Ravi Pradhan, age 10, makes 25 rupees (less than $1) per day taking plastic to a recycling center in Calcutta

HOW ARE PHYSICIANS AFFECTED?

Physicians recognize that the advice a cell biologist would give to, say, a cardiac muscle cell to be healthy—trap all glucose and oxygen available, but avoid free radicals—is not the best advice for the collection of cells that makes up a human being. Unfortunately, today we are doing just that, as shown by our rising rates of obesity. Health professionals need to understand that what seems best for an individual patient (the usual do's and don'ts) may not benefit the population, if the goal is to maximize its health. Individual risk factors need to be de-emphasized and population risk factors addressed. The most important risk factor is the gap between the rich and poor.

Genuine, widespread improvements in health and quality of life will take structural changes in the distribution of income and wealth. The evidence is clear that in rich countries, health care has not had a major effect on reducing mortality in populations, and in poor countries, the effect pales to that obtained by equitably distributing the fruits of economic growth.

Alex Carey, an Australian sociologist, remarked that the 20th century will be remembered for 3 developments: the growth of democratic processes, the growth of huge corporations, and the creation of ways in which corporations could ignore democracy.[21] An alternative to corporate-centered trade requires rethinking economic policies whose major effect has been to increase inequality worldwide. Calling it the "free market" hides extensive indirect subsidies to corporations. The size of the economic gap is the critical factor affecting population and policies that increase that gap limit health improvements.

If a healthy population is our goal, the winds of health policy are taking us in the wrong direction. We need vigorous debate over who is subsidized and by how much. Changing who shares the benefits in the world economy today is the challenge of the new century. The health of our nation and our people depends on it.

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An introduction to cultural differences

see also p. 298

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Patients differ in many ways. Some of these differences are due to patient illness, personality, socioeconomic class, or education, but the most profound differences may be cultural. Many health professionals think that if they just treat each patient with respect, they will avert most cultural problems. But that is not always the case. Some knowledge of cultural customs can help avoid misunderstandings and enable practitioners to provide better care. Beginning next month, *wjm* will be running a new series on medicine and culture. Each issue will focus on a different ethnic group and provide essential information about cultural patterns for busy practitioners.

THE DANGER OF STEREOTYPING

The danger in considering cultural differences is that of stereotyping people. All of us are unique. To say, for example, that "Russians do this" and "Vietnamese believe that" is both foolish and possibly dangerous. First, it is important to distinguish between stereotypes and generalizations. They may appear similar, but they function differently. For example, if I meet a Mexican woman named Maria and assume that she has a large family, I am stereotyping her. But if I say to myself, "Mexicans tend to have large families; I wonder if Maria does," then I am generalizing. A stereotype is an ending point, and no effort is then made to ascertain whether it is appropriate to apply it to the person in question. A generalization, on the other hand, serves as a starting point.[1]

> Knowledge of cultural customs can help avoid misunderstanding and enable practitioners to provide better care

Consider the following case study. An elderly Irish woman was hospitalized and scheduled to have surgery at the end of the week. A few days before the surgery, she suddenly started complaining of pain to her family but said nothing to her physician. Her physician was also unaware of evidence that the Irish, as a group, tend to minimize expressions of pain.[2] Confronted by the family, the physician expressed little concern because in the physician's country, women having serious pain are much more vocal than this patient was being. The physician ignored their requests that the surgery be done sooner, deeming it unnecessary.

By the time the patient went to surgery, her condition had worsened, and she died during the operation. Her daughter-in-law, a nurse, felt that had the surgeon operated when the patient first complained, she might have lived.[1]

In this case, the surgeon made the mistake of stereotyping the patient—she was a woman, and in the physician's experience, women complained loudly when in pain. Therefore, the physician failed to even reexamine the patient (in itself, bad medical judgment). If the physician had been aware of the generalization about Irish people in pain, the patient's complaints may have been taken more seriously, which may have led to an earlier operation.

THE ROLE OF GENERALIZATIONS

A generalization is a statement about common trends within a group, but with the recognition that further information is needed to ascertain whether the generalization applies to a particular person. Therefore, it is just a beginning. Because differences always exist between individuals, stemming from a variety of factors, such as, in the case of immigrants, the length of time they have spent in the United States and their degree of assimilation, even generalizations may be inaccurate when applied to specific persons.

One of the most widely cited examples of cultural misunderstanding in medical practice involves the Asian practice of "coining." In this procedure, a coin, which may or may not be heated or oiled, is vigorously rubbed on a patient's back. The idea is to "draw the illness out of the body," and the red welts that form are taken as a visible sign that the procedure was successful. American health professionals who are unaware of this traditional practice may mistake it for physical abuse, and in fact, there have been many cases of parents being arrested for employing a folk remedy that is culturally appropriate and designed to help their children.

NOT ALL PATIENTS WANT TO KNOW THEIR PROGNOSIS

American health care puts a great deal of emphasis on patient autonomy and patients' "right to know." This attitude is not shared by all cultures, however, and is contrary to the dominant beliefs of many societies. The custom in many cultures, including Mexican, Filipino, Chinese, and Iranian, is for a patient's family to be the first to

Lynsey Addario/AP

Muslims kneel in prayer at the start of New York's Muslim World Day parade

hear about a poor prognosis, after which the family decides whether and how much to tell the patient. Members of such cultural groups may believe that it would be insensitive for a patient to be told bad news and that this would only cause the patient great stress and even hasten death by destroying hope.

Some groups share the belief that only God knows when someone will die naturally, so (according to the Hmong, for example) the only way a physician could know when someone will die is if that physician planned to kill the patient.[3] Not all members of a group share these beliefs, so physicians should not automatically assume that every patient who is a member of one of these groups would want to be shielded from information. Nevertheless, a physician who is aware of such cultural differences could arrange to discuss with the patient, in advance, just who should be given information regarding the patient's condition and thus avoid unnecessarily distressing the patient or alienating the family.

Several years ago, I was asked to give a workshop at a hospital located in a predominantly Chinese area of town. The impetus for the workshop was the problem created when one of the members of the hospital's board of directors was hospitalized and put in room number 4. In Chinese (and Japanese), the character for the number 4 is pronounced the same way as the character for the word "death." Just as many American patients would not be comfortable in room 13—a number that is considered bad luck—many Chinese and Japanese patients would prefer not to be in a room called "death." Even the most sensitive health care provider could not be expected to know the significance of the number 4 without some knowledge of these 2 Asian cultures (or their languages).

Lack of eye contact in American culture may indicate many things, most of which are negative. A physician may interpret a patient's refusal to make eye contact as a lack of interest, embarrassment, or even depression. However, a Chinese patient may be showing the physician respect.[4] If the patient is female and from a Muslim country, and the physician is male, she may be trying to avoid sexual impropriety. A Navaho patient may be trying to avoid soul loss or theft. Knowing the meaning of eye contact, or lack thereof, may help avoid misinterpreting a patient's behavior.

Many health professionals think that if they just treat each patient with respect, they will avert most cultural problems

Nurses are generally taught the importance of touch. Yet, if they are caring for a patient of the opposite sex and that patient is an Orthodox Jew, for example, it is important to know that, for that religion, contact outside of hands-on care is prohibited.[5]

Cultural generalizations will not fit every patient whom physicians see, but knowledge of broad patterns of behavior and belief can give physicians and other health professionals a starting point from which to provide the most appropriate care possible. In the coming months, we hope this series will provide insights that can help in the treatment of patients from a variety of ethnic and cultural backgrounds with greater awareness and competence.

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An innovative community medicine curriculum: The La Mesa Housecleaning Cooperative

Even after several years of learning medicine from an individual, disease-oriented approach, senior medical students may be unprepared to learn about community issues. Residents, who encounter additional time demands and the responsibilities of patient care, may be even more resistant to learning about the principles of health care in the community. The standard medical curriculum often fails to address community medicine in a way that residents find constructive and engaging.

The Community Health Partnerships program at the University of New Mexico Health Sciences Center, Albuquerque, tries to involve medical residents in community-oriented primary care projects in local communities. Major goals of the program are for the residents to interact with a community and to allow community members to define the objectives of the project.

Glossary of terms

Community: A group of people with something in common: a language, geographic boundaries, age, attendance at a primary care clinic, a shared cause, or a bond of identity, history, or values. They perceive a commonality among themselves.[1]

Population perspectives: Assessments and interventions directed at improving the health of groups of people. These perspectives require knowledge about the health of defined populations and determinants of health status for those populations, including physiologic, behavioral, environmental, economic, and social factors.[2,3]

World Health Organization's definition of health: Includes social, physical, economic, emotional, and spiritual well-being, in addition to the absence of disease.

Summary points

- Community-oriented health care projects can help medical residents learn to listen, provide support, focus on process more than outcome, and be flexible and patient with group process
- Key elements for a successful resident-community project include a long-term time commitment, supportive faculty, didactic sessions on community health issues, close contact and good communication with community members, and discussion and reflection
- A successful cooperative might better address important social determinants of health—including socioeconomic status, education, empowerment, social support, and community development—than more traditional approaches to health promotion
- Graduate medical education programs should offer training for providers interested in learning about community economic development

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WHAT DETERMINES HEALTH?

Among the important determinants of health are socioeconomic status and education,[4-6] social support and networks,[7,8] self-efficacy and empowerment,[9,10] and community development and increased community capacity.[11] Along with an appreciation of these complex forces, physicians interested in community health have learned that interventions to improve health that are imposed from the outside, without community participation, are unlikely to succeed.[11]

The educational approach of the Department of Family and Community Medicine, University of New Mexico, is to allow residents to pursue their own interests. The department focuses on population-based health issues and has facilitated a network of training sites for medical students and residents outside the hospital and throughout the state. The family practice curriculum requires a community project during the second and third years of residency.[12] Residents can spend a month intensively working on a project or spread it out over 2 years, working on average half a day each week.

The community medicine curriculum has a coordinator who identifies possible projects. Each resident chooses a project and writes a proposal, to which the curriculum coordinator responds with suggestions. At the end of residency, all residents submit a report. A faculty member serves as an advisor for each resident.

Residents' projects have varied. Several residents have implemented a curriculum for violence prevention in a local high school. Others have taught health education in primary schools. One project involved assessing the health needs of uninsured Hispanic immigrants. Two residents helped set up a statewide program to prevent domestic violence. In addition to the coordinator for the community medicine curriculum, numerous faculty members in the department have ongoing community projects and are open to working with residents when approached.

The Community Health Partnerships program has brought together nurses, social workers, law students, and

faculty members interested in doing interdisciplinary work to promote health in communities. The program has provided sessions on primary care that are community oriented and focus on the social determinants of health. The residents have attended sessions on how to do community organizing, conduct needs assessments, and do surveys. They also have attended briefings by legal experts on immigration and welfare law.

A COMMUNITY MEDICINE PROJECT: THE LA MESA HOUSECLEANING COOPERATIVE

The La Mesa Housecleaning Cooperative developed out of a collaboration between Mexican women who had immigrated to the United States and their supporters from various fields of work. The supporters included two family practice residents, a community activist, a technical assistant who provided business advice and facilitated loans to women starting small businesses, and a teacher at La Mesa Elementary School in Albuquerque, where the children of the women in the cooperative were enrolled. The women came together after the residents made a presentation about access to health care during a meeting at the elementary school in this low-income community of Albuquerque where the program's activities were based. The meeting had focused on the potential effects of changes in immigration laws on the families' health and health care.

The notion of forming a cooperative grew out of these discussions. After several meetings, the residents, adopting the perspective of community-oriented primary care,[1,11] asked, "What are the major health problems facing your community and what can you do about them?" The women identified access to medical and dental care as a problem, including the inability to pay for laboratory tests, medications, and treatments. They also mentioned their fears of going to the county-supported university hospital because they had been unable to pay debts incurred for prior services.

The women unanimously concluded that the greatest barrier to healthier lives for their families and community was economic: they needed jobs. If they had money, they could pay for visits to the doctor, tests, and treatments. They could also pay for housing, clothing, food, and school supplies—all of which they saw as major factors affecting their health and well-being.

THE IDEA FOR A COOPERATIVE

The supporters suggested forming a cooperative. A review of successful cooperatives indicated that socioeconomic status, education, empowerment, social support, and community development might be better addressed in such a venue, rather than through a more traditional approach to health promotion.[13-15] In response, one of the women

Family practice residents learn first hand about community development and health promotion

suggested the idea of a housecleaning cooperative. It would need little initial investment for supplies, drew on skills the women already had, and in the experience of women who had worked for private cleaning companies, could be lucrative.

Meetings then became more focused. The technical aid worker outlined the basic tasks required to start a business. A representative from a successful sewing cooperative in Albuquerque was invited to discuss the history of that group. The housecleaning cooperative arranged a visit to see the sewing cooperative in action. The women began inviting guests of their own, including the owner of a cleaning business who discussed details of the work and a woman who spoke about selling cleaning products.

As the project progressed, the group arranged various activities outside the meetings. A local priest was helpful in getting school supplies for the women's children. He also set up several meetings for spiritual reflection at the church. Some women enrolled in more formal English classes. The teacher who was a supporter of the group helped women with the paperwork needed to apply for driver's licenses, and those who did not know how to drive began taking lessons.

The cooperative has operated at a modest pace. Each woman has had one to three jobs a week. With the help of the residents and some medical students doing a one-month community project, the women obtained a $1,000 grant for a phone line and office operations. They subsequently received another grant of $5,000 to buy a used van and to help pay for driving lessons.

Virtually all the women got jobs through the cooperative. One woman who already had legal residency originally joined the cooperative to help take care of children. Through the meetings, she discovered an administrative talent. She took a job cleaning rooms in a motel and within several months became the manager of cleaning services at the motel. She then hired two other women in the cooperative to clean rooms there. Another wo-

man began her own business selling roasted corn door to door.

Many of the women's husbands were not employed full time. As the women worked more, the husbands took on more domestic responsibilities, and the men's traditional authority in the households shifted. At one meeting, the cleaning services manager for the motel spontaneously said, "When I first began this cooperative, my husband told me if I got my GED [high school equivalency certification], he would leave me. Now, as the commercial says, 'The rules have changed.' Now he works for me."

The cooperative's path has not been completely smooth. Attendance at the meetings has periodically dropped off. At one point, a heated conflict split the cooperative into two factions. The issue centered on trust: a woman who operated the phones, who was not a member but was paid by the cooperative because she was bilingual, was accused of not distributing jobs equitably. A local nun offered her services as a facilitator, and the women agreed to continue working together.

For the residents, becoming an effective supporter meant unlearning many of the things that they had learned as physicians. Instead of showing what they knew, the residents became better at listening and learning with others. Instead of dominating the process, the residents found benefit in restricting their participation. Above all, the residents learned that effectiveness in this process required flexibility and patience.

IMPLICATIONS FOR HEALTH PROFESSIONAL TRAINING IN COMMUNITIES

Based on the residents' experiences, the key ingredients for projects in community medicine include having residents make a time commitment to the project (half a day a week for 2 years); including faculty who are willing to support the work; providing formal education, such as didactic sessions in cross-cultural issues and community organizing; convincing residents that this work is worthwhile either by example (discussing the major social determinants of health) or through brief immersion experiences (participants must be convinced that this work is valuable; otherwise, they will be pulled away by the incessant demands of learning clinical medicine). Other key ingredients include focusing more on process than outcomes; working through community leaders who can link residents with other members of the community; working in pairs or teams to achieve a consistent presence despite difficult schedules; providing an opportunity for reflection (through a final report, group discussion, or both) about what was learned; and discussing the congruencies and disparities of theory and practice.

By providing residents with the freedom and time to pursue an unusual community project, this program allowed them to experience some of the barriers their patients face in achieving health.[16-19] Economic development for the women in the housecleaning cooperative was a precondition for improvements in the quality of their lives, mental health, and physical health. By focusing on making the improvement of economic conditions a goal of a community medicine project, the residents were able to foster economic changes that were more likely to contribute to positive health outcomes than many complicated health interventions.

Edna Alvarado provided important comments that have been incorporated into this article.

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COMMENTARY

Faculty support is essential for success

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Residents in primary care training programs are increasingly required by the Accreditation Council for Graduate Medical Education to have experience in community medicine.[1] The Family Practice Program Requirements state that residents in family practice must be taught to assess and understand the important health needs of the community in which they work.[1] Internal medicine similarly requires service to that community as an important part of professionalism, and residents are encouraged to participate in community programs. Pediatric curriculums include community-oriented care involving the care of children in underserved groups, with attention to the multicultural dimensions of health care.

The Tavistock Group—a multidisciplinary group of health professionals who met in Tavistock Square in London in 1991— recently issued a policy statement for those who shape and give health care.[2] One of their five tenets states that cooperation with each other and those served is imperative for those working in the health care delivery system. In a recent treatise on innovative thinking for the improvement of medical systems, Plsek theorizes that the tools of idea generation are based on three principles: mental attention, escape, and movement.[3] These are activities that help people to look at their current situations in a different way, to escape the way they usually think about things, and to support them in generating innovative, testable ideas to improve health care systems.[3]

The article by Miller and colleagues shows that a community needs assessment conducted by the community itself led to the development of a truly innovative project that at first blush would not have appeared to improve the health of the community. But, as the authors indicated, economic conditions and hygiene are often more important determinants of health outcomes than traditional medical or public health interventions.

Besides allocated time and didactic teaching of community organizing and cultural competency issues, a critical element for the success of projects such as this is faculty commitment. Faculty must be willing not only to support the effort but also to engage in the activity itself or in similar endeavors and to thereby serve as role models to convince residents that this type of work is worthwhile. In Los Angeles, the Venice Family Clinic and Los Angeles Free Clinic serve as community service placement sites for residents in family practice, internal medicine, pediatrics, and obstetrics and gynecology from the University of California at Los Angeles (UCLA), UCLA-Santa Monica, Cedars-Sinai, and Kaiser Permanente medical centers. The success of these partnerships reflects the level of faculty commitment and involvement. The hope is that residents who are involved in such projects will develop an ongoing commitment to community service.

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The two sides of compassion

In a journey of compassion what we have ultimately as our guide is whatever understanding we may have gained along the way of ourselves and others, chiefly those close to us, so close to us that we have lived daily in their sufferings. From here on, then, in the blinding smoke it is no longer a "seeing world" but a "feeling world"—the pain of others and our compassion for them.

Norman Maclean

From *Young Men and Fire,* Chicago: University of Chicago Press, 1992

Perhaps it's what they call "compassion fatigue," the idea that we get so much human suffering thrust in our faces every day from the media that we've become sort of numbed, we've used up all our reserves of pity, anger, outrage, and can only think of the pain in our own knee.

David Lodge

From *Therapy,* New York: Penguin Books, 1996

Correction

In the Op-Ed by Grimes in the March issue of *wjm,* the correct reference citations for references 10 through 13 are:

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Medical Myth

Ten percent of patients who are allergic to penicillin will have serious reactions if exposed to cephalosporins

Cephalosporins and penicillins share a common beta-lactam ring. It is commonly taught that at least 10% of patients who are allergic to penicillin will have an adverse reaction to cephalosporins. This potential cross-reactivity has extremely important therapeutic implications because many serious infections are best treated with cephalosporins as first-line therapy.

In considering cross-reactivity, two important points must be made. First, true penicillin allergy is not common. Graff-Lonnevig et al[1] noted that in a cohort of 298 children whose parents gave the history of penicillin allergy, only one had a positive result on a radioallergosorbent test (an in vitro test of penicillin allergy). A 10-day course of antibiotics was given to the other 297 patients. Only 10% of children had any reaction that was consistent with allergy, and 22 of these 30 reactions occurred after day 7. In a similar study by Surtees et al,[2] of 132 patients referred from British general practitioners, only 4 were confirmed to have an allergy by radioallergosorbent test. The remaining 128 were given a single dose of oral penicillin and had no allergic reaction. The true incidence of allergy in patients with a history of penicillin allergy is substantially less than 10%; therefore, the cross-reaction rate between penicillins and cephalosporins must certainly be less.

> The cross-reaction rate between third-generation cephalosporins and penicillin approaches 0%

Second, most of the evidence suggests that a cross-reaction between penicillin and cephalosporins is rare, perhaps no greater than that between penicillins and structurally unrelated antibiotics. Anne and Reisman[3] reviewed data from published series and postmarketing reports from drug manufacturers. Serious allergic reactions to cephalosporins occur in about 0.02% of patients who take the antibiotic. The rate of serious reactions in patients with a penicillin allergy appears to be twofold to fourfold this baseline rate. However, a threefold baseline rate of serious reactions is seen in patients with penicillin allergy when they are given a structurally unrelated antibiotic.

These data suggest that a history of penicillin allergy is a general risk factor for allergic manifestations to antibiotic administration and is not specific to cephalosporins. The authors note that the initial studies that suggested a high cross-reaction between penicillin and first-generation cephalosporins were done when issues with the manufacturing process meant that cephalosporins were frequently contaminated with penicillin. The cross-reaction rate between third-generation cephalosporins and penicillin approaches 0%.[3]

Anne and Reisman also note that skin testing does not differentiate those patients in whom a serious reaction to cephalosporins will develop.[3] The myth that a high rate of cross-allergy between penicillin and cephalosporins exists needs to be exposed so that patients who need cephalosporins will be given them whether or not they have a history of penicillin allergy. Physicians should note that patients with true penicillin allergy are at slightly increased risk of an allergic reaction when given any antibiotic.

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capsule

Watching television can alter self image Television came to Fiji as late as 1995 and there is still only one channel, which mainly shows programs from the United States, Australia, and Britain. But will its arrival be associated with an increase in childhood eating disorders? A recent report suggests that teenage girls who watch television at least three times a week are 50% more likely than others to see themselves as fat and 30% more likely to diet (*JAMA* 2000;283:1409). Eating disorder symptoms have increased fivefold since the introduction of television.

Medicine Cabinet

How to manage head lice

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People are infested by 3 types of lice: body lice (*Pediculus humanus* var *corporis*), head lice (*P h* var *capitis*), and crab or pubic lice (*Phthirus pubis*). Lice have evolved with their human hosts and have developed life cycles and anatomy best suited to those particular areas of the body.[1] Body lice are associated with severe systemic diseases such as typhus and trench fever. Infestation with crab lice most commonly follows intimate or sexual contact.[2] Of the 3 lice types, head lice get the most attention because they are thought to be highly prevalent and to be developing resistance to commonly used pediculicides. The treatment of head lice is a multimillion dollar industry.[3] In this review, we look at this treatment.

Summary points

- Head lice are transmitted mainly through head-to-head contact
- Only people with active infections should be treated
- Over-the-counter pediculicides are the agents of choice
- Manual removal of lice eggs and nits with a fine-tooth comb should accompany pediculicide treatment
- A second treatment is usually required in 7 to 10 days to kill any newly hatched lice

THE EXTENT OF THE PROBLEM

The Centers for Disease Control and Prevention (CDC) report that 6 to 12 million people in the United States are infested each year with head lice.[4] Children aged 3 to 10 years in preschool and elementary school are most likely to have infestations. Girls have an increased risk because of more frequent head-to-head contact. African Americans have fewer reported infestations compared with other ethnic groups, which may be due to differences in hair thickness and curl. Head lice are found across all socioeconomic classes.

THE LIFE OF A HEAD LOUSE

Head lice are thought to be transmitted mainly through head-to-head contact. Fomites—clothing and other articles that transmit disease, such as combs, hats, helmets, bedding, and other personal items—have been implicated in their transmission, although this is not universally accepted.[1,5]

Head lice are obligate ectoparasites that live on human skin and can survive only on human blood; they do not infest other animals.[1] They need several meals of blood each day and die if away from the host head for more than 2 days.[1] They are wingless and cannot jump but climb quickly from hair to hair when the hair is dry. When the hair is wet, lice hardly move, making them vulnerable for identification and removal by gloved hands or with the aid of a specially designed fine-tooth comb.[6]

The adult female louse firmly attaches 7 to 10 eggs a day to human hair using a gluelike, water-insoluble substance. These eggs are deposited close (1 mm) to the scalp so that the heat and moisture from the host's head incubates the egg.[5] Eggs laid farther away from the scalp are not likely to be viable. They are most commonly found in the occipital and postauricular regions, but may be found anywhere on the head. By 7 to 10 days, when the nymph emerges from the egg, it is close enough (within 6 mm) to the scalp to easily have its first meal of blood. The distance nits or hatched eggs are from the scalp can be used as an indicator of how long the person has been infested.[7,8] Lice nymphs undergo 3 molting stages before achieving adulthood at 7 to 10 days.[6,9] Adult lice live about 30 days.

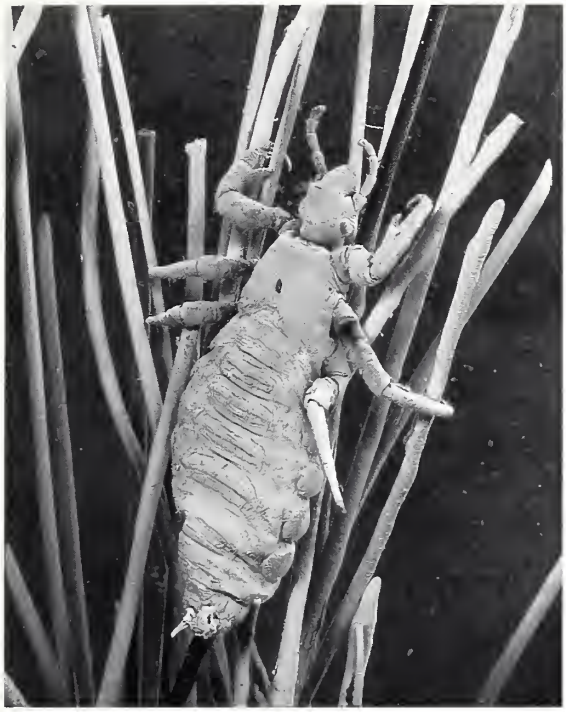
People with infestations of head lice usually have no more than 10 to 12 live lice at a time but can have many hundreds of unhatched eggs and nits.[6,9] Head lice bites and saliva may elicit a host immune response.[1,4] The resulting pruritus and sensation of "something crawling on the head" are the most common symptoms. Constant scratching may result in scalp excoriations and secondary bacterial infections. People with infestations may also present with fever, lymphadenopathy, headache, rash, malaise, and increased irritability.[4,10] Most infestations are asymptomatic, however.

TREATMENT OVERVIEW

Many experts agree that before treatment, there must be positive identification of live lice and unhatched eggs, not just nits. Dandruff, dried hairspray, lint, sand, and hair casts, which have all been mistaken for eggs and nits, are much more easily removed. It is best to search for head lice when the hair is wet, using a strong light and a magnifying glass. A fine-tooth comb and clear tape can help capture and identify the insect.[7] Once head lice infestation has been confirmed, treatment involves a multipronged approach that includes pediculicidal agents, mechanical removal, and possibly environmental measures (although there is not widespread agreement on this) to prevent further transmission and reinfestation.

Once an infestation of head lice is confirmed, a pediculicide should be carefully applied, following the labeling on the package. All household members with active infestation should be treated simultaneously. Although various pediculicides are approved for use in young children, the CDC does not recommend their use in children 2 years old or younger; only manual removal of lice, eggs, and nits is recommended for this age group.

The use of conditioners should be avoided before ap-



Eye of Science/SPL

The head louse is 2 to 3.5 mm long and lives only 3 weeks (×30 magnification)

plying a pediculicide because they coat the hair and may protect the lice. According to the CDC, if the lice are moving slowly or dead 8 to 12 hours after treatment, then the pediculicide is probably effective.[4] If, however, the lice are as active as before treatment, then an alternative agent may be required. Ideally, 2 to 3 days should elapse after pediculicide treatment before the hair is washed. Repeating the treatment 7 to 10 days after the initial treatment is generally recommended to kill any newly hatched lice. Pruritus may persist for 7 to 10 days after successful treatment and should not be misconstrued as treatment failure.[9]

Most experts advocate the physical removal of viable eggs in conjunction with the use of a pediculicide to prevent reinfestation from emerging nymphs that may have survived treatment. Moreover, many schools enforce a "no-nit" policy that prevents a child's return to class until the hair is completely free of eggs and nits. The use of a sturdy fine-tooth comb—usually included in the pediculicide kit—is recommended for this time-consuming, tedious process. The hair should be combed at least every 2 to 3 days until no more eggs or nits are observed. Combing should start with small sections of wet hair, working from the scalp outwards, although back-combing to dislodge eggs and nits may be helpful.[9,11] The process may take an hour or more each day for several days. For young children, playing their favorite videotape during the combing can be used to distract them.[11] All household members should be inspected for infestation.

Fomite control is a controversial aspect of lice management. The natural history of head lice suggests that they rarely survive off the host for more than a couple of days and that herculean efforts to treat the environment are often time-consuming, disruptive, and perhaps, unwarranted.[1,5] However, many experts continue to endorse strategies to minimize fomite transmission, despite the minimal risk.[4,7,8,12] The CDC recommends that all clothing and bedding in contact with the infested person during the 2 days before pediculicide treatment be laundered with hot water and placed in the dryer using the hot cycle. All nonwashable items should be quarantined in plastic bags for 2 weeks should any surviving eggs hatch in that time period. Disinfection of combs and brushes in hot water or alcohol is also recommended. Although various home fumigation products and insecticide sprays are marketed, no experimental or epidemiologic data are available to warrant their use.

UNCONVENTIONAL TREATMENTS

Unconventional remedies include oil-based treatments, gasoline or kerosene, and head shaving.[11] Oil-based remedies such as olive oil are thought to immobilize and suffocate the lice. No reliable data support these claims, and these substances may be difficult to remove and may be irritating to the eyes and skin. Gasoline and kerosene have caused severe burns.[13] Head shaving is traumatic and unwarranted.

TOPICAL AGENTS

Pediculicides are lousicidal or toxic to the nymphs and adult lice. The degree that they are ovicidal or toxic to the developing embryo varies with each agent. During the first 4 days of its existence, the developing embryo lacks a central nervous system and is impervious to agents that attack the central nervous system.[12] Products with long residual effects are more likely to be ovicidal. Although most agents can quickly kill nymph and adult lice, no product can ensure 100% ovicidal activity. Therefore, physical removal of eggs and nits following any pediculicide treatment is essential. Available agents are listed in the table.

First-line topical agents are available over-the-counter and are devoid of major toxicities. These products contain either pyrethrins combined with piperonyl butoxide or the more potent synthetic pyrethroid, permethrin.[4,8] Natural pyrethrins are extracts from the flower of the pyrethrum plant, *Chrysanthemum cinerariaefolium*.[14] These agents kill lice by excessively stimulating their nervous systems. The addition of piperonyl butoxide synergizes pyrethrin activity by delaying its detoxification by the louse.[14] Products containing pyrethrin do not have residual pediculidical effects. For this reason, retreatment is necessary 7 to 10 days later to kill any newly hatched lice. The more potent

*Available agents for management of head lice**

Generic	Brand	Availability	Directions	Repeat application	Side effects
Recommended agents					
Permethrin 1%	Cream: NIX® Creme Rinse	Over the counter	Hair should be washed and towel dried. Apply sufficient amount to hair and leave for 10 minutes. Rinse.	May not be necessary. Repeat dose if live lice are observed 7 days or more after initial treatment to kill any newly hatched lice.	Itching, redness, or swelling of scalp may occur; may cause eye irritation; avoid in patients with history of allergy to chrysanthemum or ragweed.
Pyrethrins 0.33% and piperonyl butoxide 4%	Shampoo: RID®, Pronto®, A-200® (various manufacturers & formulations available)	Over the counter	Apply sufficient amount to dry hair and leave for 10 minutes. Add enough water to form lather. Rinse.	Repeat dose is necessary in 7 to 10 days to kill any newly hatched lice.	Itching, redness, or swelling of scalp may occur; may cause eye irritation; avoid in patients with history of allergy to chrysanthemum or ragweed.
Lindane 1%	Shampoo (various manufacturers)	Prescription only	Apply sufficient amount to dry hair and leave for 4 minutes. Add enough water to form lather. Rinse.	Repeat dose if live lice are observed 7 days or more after initial treatment to kill any newly hatched lice.	Use with caution. Potential for systemic absorption and central nervous system side effects: seizures, dizziness.
Malathion 0.5%	Lotion: Ovide®	Prescription only	Apply lotion to dry hair until thoroughly moistened. Rinse off after 8 to 12 hours.	Repeat dose if live lice are observed 7 days or more after initial treatment to kill any newly hatched lice.	Strong odor; alcohol vehicle is flammable and may cause irritation to eyes.
Alternative agents for consideration					
Permethrin 5%	Cream: Elimite®	Prescription only	Apply to dry hair and allow to remain overnight under shower cap	Not approved by the FDA for treatment of head lice.	
Ivermectin	Tablets (3 mg, 6 mg): Stromectol® (topical formulation not commercially available)	Prescription only	200 μg/kg by mouth as a single dose have been used for treatment of lice.	Not approved by the FDA for treatment of head lice.	

FDA = Food and Drug Administration.
*All treatments should be accompanied by physical removal with a fine-tooth comb to remove eggs and nits.

permethrin, unlike pyrethrins, remains active for 2 weeks.[15] Therefore, retreatment with permethrin is generally not necessary because of its residual effects. For resistant cases, permethrin 5% cream (prescription strength) applied for an extended period—overnight under a shower cap—has been used.[8,16]

When these first-line pediculicides have failed after proper application or if the person is allergic to ragweed or chrysanthemums, alternative agents are prescriptive lindane or malathion. Lindane, or γ-benzene hexachloride, is a chlorinated hydrocarbon pesticide that was once the most common treatment of lice.[16] The agent is slow-acting and has lousicidal and limited ovicidal effects.[8] It, too, kills lice by excessively stimulating their nervous systems. Lindane can be systemically absorbed, and seizures and, in rare cases, deaths have been reported, primarily after gross misuse, overuse, or accidental or intentional ingestion. With reports of resistance and the availability of

safer, more effective alternatives, lindane is no longer considered a first-line agent.[12,16,17]

Malathion, an organophosphate insecticide, was recently reapproved by the Food and Drug Administration for the treatment of head lice. It had been taken off the market for commercial reasons because of its objectionable odor, flammability, and long application time.[18] Malathion is an irreversible cholinesterase inhibitor with rapid lousicidal and ovicidal effects.[14,18] Malathion is available as a lotion that is applied to dry hair and left on for 8 to 12 hours. Because this formulation contains 78% isopropyl alcohol, the lotion and wet hair should not be exposed to flames or heat sources such as hair dryers. Stinging of skin and eye irritation may occur with use.

ORAL AGENTS

Ivermectin is an antiparasitic agent that is effective against several insects and nematodes such as *Onchocerca volvulus*, which causes river blindness, and *Strongyloides stercoralis*, a gastrointestinal nematode.[19] These organisms die of tonic paralysis due to ivermectin. Brief reports and small open studies suggest that ivermectin, given as a single dose of 200 µg/kg, may be a safe and effective oral agent against scabies and head lice as well.[20-22] Because complete eradication of head lice was not observed in all cases, some researchers advocate a second dose in 10 days to kill any newly hatched lice.[20] Ivermectin topical solution has also been effective in eradicating head lice in a small number of patients.[23] Unfortunately, a topical preparation is not yet commercially available. Although experience with ivermectin for other parasitic diseases suggests it is relatively safe, a disturbing number of excessive deaths has recently been reported among elderly patients in a long-term facility who were treated with ivermectin for scabies.[24] In addition, safety data on its use in children weighing less than 15 kg and in pregnant and nursing women are not available.

The combination product of oral trimethoprim and sulfamethoxazole has also been cited, mainly in small observational studies and anecdotal reports, as an alternative to topical pediculicides.[8,25] This antibiotic seems to kill the symbiotic bacteria found in the lice gut, which ultimately kills the lice.[26] However, the potential for allergic reactions and the risk for promoting bacterial resistance limit its widespread use for this indication.[11,27]

RESISTANCE

Treatment failures to pyrethrins, permethrins, lindane, and malathion have all been reported.[16,18,27] However, whether this is attributed to true reduced susceptibility of the lice to these agents or to poor compliance, incorrect application, or reinfestation has been much debated. Currently, the extent of the problem in the United States is hard to quantify.[28]

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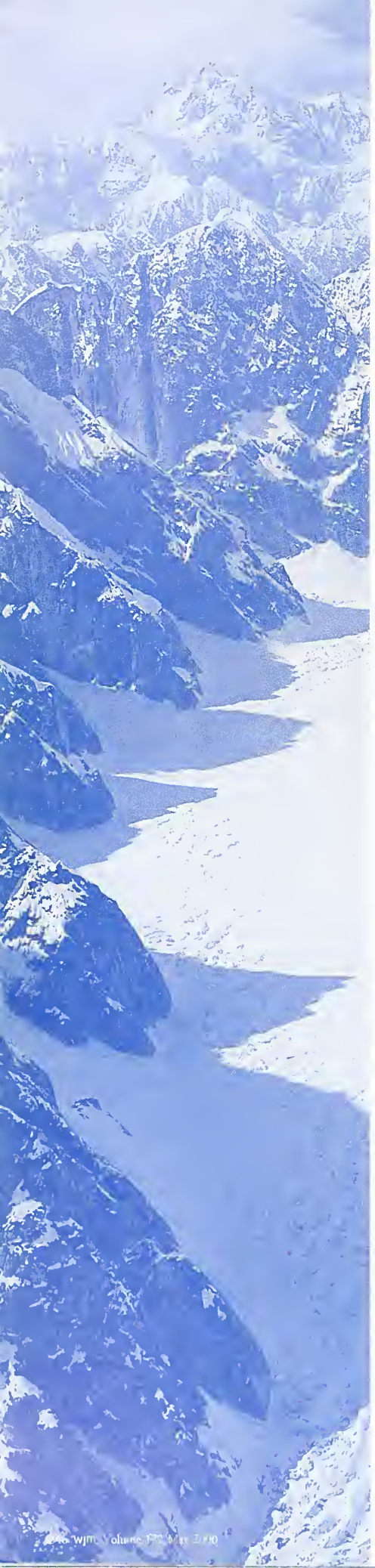

West of the Rockies

Poetry

El Salvador, San Francisco

Salvador, for the country of his birth,
young man with liquid eyes
beaten, hanged by the wrists,
toenails pulled out, one by one,
laid on bedsprings laced with electricity.

I know him as an eager student,
busboy, dishwasher, prep person,
trying to keep a car running,
a roof over his head,
a future in his thoughts.

Today, we greet each other
on the street where I live
behind a pink Victorian
with lace curtains

and, when I ask how he's doing,
he tells me of his story of torture and escape,
shows me he still carries my card
so if he is arrested
they will know he has people.

When we get to the machine-gun death of his father,
a simple man, one who liked to drink a lot,
one who offered his body for that of his son,
we are surprised by our weeping
in the busy lunch time traffic,
next to the bank, my parked car,
mothers with babies going by.

He shows me the most visible scars,
wrist, chest, arm
and tells me sadly of his twisted toes.

I start wishing for an end, to know
how he has come to be in San Francisco,
to take a job, love a girl, carry my card
with so much horror embedded in his flesh.

I reach past myself to touch his arm,
hold his hands and, then, we go,
each to our own afternoon.

Marty Williams
Co-Director, Bay Area Writing Project
Berkeley, CA
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Speaker's Corner

Let the buyer beware

Language, a friend once told me, is sacred. Words, he explained, are not simply tools, conventions for describing experience. Words are part of experience. They help define and create it. Use words carelessly, and witness the trivialization of tradition. Use them indifferently and watch centuries of culture dissolve like mist in the morning sun.

My friend is Native American. Because his remarks occurred in the context of program planning for Indian teens, I initially understood them as sad commentary on the contemporary crisis of Native American communities. Young Indian people are turning away from their culture, I thought. How tragic.

How provincial. It is easy to recognize apathy growing in someone else's heritage, but much more difficult to acknowledge it sprouting in one's own cultural yard. Indifference surrounds us all, regardless of our histories and customs. It challenges our most cherished traditions, changes our most fundamental commitments.

Listen to the modern language of medicine. Patients have become "customers." Physicians, nurses, and health professionals are now "providers." Our health system increasingly qualifies "care" with "quality," "managed," "consumer-oriented," and "cost-effective." Hospital mission statements highlight customer satisfaction, performance improvement, and consumer rights. Principles of total quality management and continuous quality improvement are standard parts of clinical strategic planning. Doctors discuss "encounters" and "superbills," while administrators review fee structures and reimbursement schedules. Insurance companies outline benefit packages to health plan enrollees as hospitals compete for improved market shares of carefully identified service populations. The language of commerce, of supply and demand, has infiltrated health care.

Some of my colleagues are not especially alarmed about the incursion of economic terms into medical practice. They laugh at my concern over the gradual merger of business with medicine. "Medicine already is a business," they chide me. "What planet have you been practicing on?"

Others bridle at the suggestion that new language signals a departure from old values. "They're just words," one physician recently quipped. "They don't say anything about who I am or how I take care of my clients."

Perhaps they do. Perhaps the flux in words says as much about who physicians and patients are and how they see themselves as it does about the rise of profit and finance in our world. As our words have changed, as the language of the so-called health care industry has evolved, so perhaps have our thoughts about sickness and health. Might the drift in jargon reveal a more fundamental reevaluation of role and responsibility in healing?

Medicine's linguistic heritage is steeped in interpersonal support and reliance. Etymologically, a patient is "someone who suffers" (from the Latin *pati*), a doctor someone who "teaches" (Latin *docere*), and a nurse someone who "nourishes" (Latin *nutrire*) To practice is "to advise" (from Old French *practise*); to care is "to show attention" (Old English *caru*); to be compassionate is "to suffer with" (Latin *compati*). Such language does not depict the professional-patient relationship as a quantifiable exchange or transaction. It instead portrays interactions between health professionals and patients as shared experiences and paints the process of caring for someone who suffers as a reaching, not meting, out of attention and compassion.

Doctors who become providers give services instead of serve. Patients who become consumers receive responsibility rather than compassion.

Modern practitioners profess allegiance to this legacy. Many promote participation, urging the empowerment of both the sick and the healthy so that all people might take better care of themselves. The aim, we claim, is partnership. Unfortunately, our language belies our noble intentions. When we call medical professionals "providers," we suggest that health is something dispensed; doctors no more provide people with good health than educational diplomas provide doctors with empathy. When we call patients "consumers," we imply that those who fall sick—and, even worse, those who do not recover—somehow are responsible. Sick and dying patients are not simply failed consumers, people unable to barter effectively for the right lifestyles and services. Our words risk burdening instead of relieving. They subtly stress fault and accountability in illness and recovery, rather than caring and support. Doctors who become providers give services instead of serve. Patients who become consumers receive responsibility rather than compassion.

The language of commerce, of supply and demand, has infiltrated health care

In an era of expanded science, wealth, and technology, disease is increasingly an affront—to individual expectation, to institutional certainty, to the shared sense of control. But healing is not a tradition rooted in control. To heal means "to make whole" (Old English *haelen*), and to be whole means more than dominating disease and remaining physically intact. Can doctors who redefine health as commodity truly expect to be called "healer"? Can patients who negotiate for medical services really hope to be healed?

Mark Carroll

Flagstaff, AZ
mcarroll@infomagic.com.

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Assistant Chief, Division of Cardiovascular Medicine—The University of California, Davis, School of Medicine is recruiting for one full-time position in the Division of Cardiovascular Medicine, Department of Internal Medicine. Appointment will be at the assistant, associate or full professor level. Applicant should be board certified in internal medicine and cardiovascular medicine, and be eligible for licensure in the state of California.

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ARIZONA

All courses listed have been certified as meeting the criteria for Cat 1 of the ArMA CME Certificate and the AMA Physicians Recognition Award. To list Cat 1 CME programs, please send information to Arizona Medical Association, 810 West Bethany Home Road, Phoenix, AZ 85013; or phone (602) 246-8901.

OCTOBER 27-29, 2000: Clinical Endocrinology for Primary Care Physicians. Medical Education Resources at The Phoenician, Scottsdale, AZ. 11 hrs Cat 1. Contact MER (800) 421-3756; Fax (303) 798-5731; www.mer.org.

CALIFORNIA, HAWAII, AND NEVADA

All courses and meetings listed are approved for Cat 1 credit toward the CMA Certificate in CME. To list accredited courses here, please send information at least two months in advance to Paulette Richardson, Continuing Medical Education, California Medical Association, PO Box 7690, San Francisco 94120-7690; or phone (415) 882-3387. For more information on accreditation or certification, please write to the above address.

ALLERGY/IMMUNOLOGY

AUGUST 11-13, 2000: A Midsummer Night's Wheeze. American College of Allergy, Asthma and Immunology at La Costa Resort and Spa, Carlsbad, CA. Contact: (858) 459-0681; fmellon@smallworldtravel.com.

CARDIOLOGY

JUNE 16-18, 2000: Coronary Heart Disease Update. Parc Fifty Five, San Francisco, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

JULY 23-26, 2000: 20th Annual Current Concepts in Primary Care Cardiology. UC Davis Health System at Northstar at Tahoe, Truckee, CA. 19 hrs Cat 1. Contact Office of CME (916) 734-5390; Fax (916) 734-8966; http://web.ucdmc.ucdavis.edu/edu.

AUGUST 17-19, 2000: Critical Care Cardiology. UCSF and American College of Cardiology at Grand Hyatt Hotel, SF. 16.5 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme.

EMERGENCY MEDICINE

MAY 15-16, 2000: High Risk Emergency Medicine. Center for Emergency Medical Education at Harrah's, Las Vegas, NV. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

MAY 17, 2000: ED Compliance 2000. Center for Emergency Medical Education at Harrah's, Las Vegas, NV. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

JUNE 1-2, 2000: Improving Emergency Department Patient Satisfaction and Reducing Length of Stay. Center for Emergency Medical Education at Harrah's, Las Vegas, NV. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

AUGUST 21-24, 2000: National Emergency Medicine Board Review. Center for Emergency Medical Education at Harrah's, Las Vegas, NV. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

ENDOCRINOLOGY & METABOLISM

JUNE 21-24, 2000: The Endocrine Society's 82nd Annual Meeting: Endo 2000 Toronto. The Endocrine Society at Toronto, Ontario, Canada. 37 hrs Cat 1. Contact the Endocrine Society (202) 347-6659 or (888) 695-5481; Fax (888) 695-5498 or (202) 347-6674; ENDO@Laserreg.com, www.endo-society.org/scimtgs/scipub.htm.

FAMILY PRACTICE/PRIMARY CARE

MAY 27-29, 2000: Pediatric Symposium. California Chapter, American Academy of Pediatrics at Monterey Conference Center, Monterey, CA. 13 hrs Cat 1. Contact California Chapter 1, (415) 459-4775; Fax (415) 459-0617; aapbev@aol.com.

JUNE 11-16, 2000: 24th Annual Fingers to the Toes Primary Care Orthopaedics. UC Davis Health System at Stanford Sierra Camp, Fallen Leaf Lake, South Lake Tahoe, CA. 28.5 hrs Cat 1. Contact Office of CME (916) 734 5390; Fax (916) 734-8966.

JULY 2-7, 2000: Essentials of Women's Health: An Integrated Approach to Primary Care & Office Gynecology. UCSF at Hapuna Prince Hotel, Big Island, HI. 24 hrs Cat1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme.

JULY 7-9, 2000: San Diego Academy of Family Physicians' 44th Annual Postgraduate Symposium: Family Medicine Update 2000. SDAFP at Hotel del Coronado, San Diego, CA. Contact Terry Camarata (619) 422-1186; Fax (619) 476-1536.

JULY 10-13, 2000: Family Practice Board Review Course. UCSF at Fairmont Hotel, San Francisco, CA. 25 hrs Cat 1. Contact Julia K. Engleton, (415) 476-5250.

NOTICE

State Associations should send their CME listings for publication to:

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CME listings can also be found on our website at www.ewjm.com/misc/CMEads.shtml

AUGUST 13-18, 2000: Essentials of Primary Care: A Core Curriculum for Practice in the Managed Care Era. UCSF at Squaw Creek, CA. 25 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme.

OB/GYN

JUNE 20-24, 2000: Lactation Educator Training Program. UCLA Extension and Memorial Medical Center at Springfield, IL. Contact UCLA Extension (310) 825-8423; www.uclaextension.org/healthsci/lactate.htm.

JULY 20-22, 2000: The 28th Annual Seminar for Physicians on Breastfeeding. La Leche League International at Hilton Head Ocean Front Resort, Hilton Head Island, SC. Contact: Carol Kolar (847) 519-7730; Fax (847) 519-0035; ckolar@llli.org.

ONCOLOGY

JUNE 4, 2000: CTTR 108th Semi-Annual Cancer Seminar: Tumors of the Bladder and Male Genitourinary System. CTTR at Westin South Coast Plaza, Costa Mesa, CA. 10 hrs Cat 1. Contact CTTR, c/o Loma Linda University School of Medicine, (909) 558-4788; Fax (909) 558-0188; cttr@linline.com.

SURGERY

JUNE 14-17, 2000: 16th Annual San Diego Shoulder Arthroscopy/Arthroplasty Course. AAOS at Hyatt Regency, La Jolla, CA. Contact Rebecca Quiring (760) 940-2066.

JULY 28-30, 2000: Comprehensive Review Course in Hand Surgery 2000. American Society for Surgery of the Hand at Dallas, TX. 25 hrs Cat 1. Contact ASSH (847) 384-8300, Fax (847) 384-1435; Meetings@hand-surg.org

GENERAL/MULTIDISCIPLINARY

MAY 17-20, 2000: 21st Annual Scientific Sessions. North American Society of Pacing and Electrophysiology at Washington, DC. 27 hrs Cat 1. Contact NASPE (508) 647-0100; Fax (508) 647-0124; info@naspe.org; www.naspe.org.

MAY 22-26, 2000: Advances in Internal Medicine. UCSF at Cathedral Hill Hotel, San Francisco. 33.5 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme

MAY 25-27, 2000: 3rd Annual Current Issues in Anatomic Pathology - 2000. University of California, San Francisco and Stanford University at The Mark Hopkins Inter-Continental, San Francisco, CA. 19.5 hrs Cat 1. Contact Office of CME (415) 476-5808; Fax (415) 502-1795.

JUNE 9-11, 2000: Issues in Women's Health. Medical Education Resources at Treasure Island, Las Vegas, NV. 11 hrs Cat 1. Contact MER (800) 421-3756; Fax (303) 798-5731; www.mer.org.

JUNE 12-16, 2000: Advances in Internal Medicine. UCSF at UCSF Parnassus Campus, Cole Hall. 33.5 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme

JUNE 18-22, 2000: Recent Advances in Venous Thrombosis, Pulmonary Embolism and Anticoagulation Therapy: From A to V Leiden. UC Davis at The Mauna Lani Bay Hotel, Kohala Coast, HI. 18 hrs Cat 1. Contact CME UC Davis (916) 734-5390; Fax (916) 734-0188.

JULY 9-18, 2000: World Alzheimer Congress 2000: With Change in Mind: Pivotal Research and Creative Care. Alzheimer's Association, Alzheimer's Disease International and Alzheimer Society of Canada in Washington, DC. Contact (312) 335-5813; Fax (312) 335-1110; alzheimer2000@alz.org; www.alzheimer2000.org.

JULY 21-23, 2000: Dermatology for the Non-Dermatologist. Tenaya Lodge, Yosemite, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

AUGUST 4-6, 2000: Clinical Endocrinology for Primary Care Physicians. Monterey Plaza, Monterey, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

AUGUST 13-23, 2000: USC 42nd Annual Postgraduate Refresher Course. Part 1(13th-19th): USC at Hyatt Regency Hotel, Maui, HI. 28 hrs Cat 1. Part 2 (20th-23rd): Hapuna Prince Beach Hotel, Big Island of Hawaii. 10 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

AUGUST 18-19, 2000: Controversies in Women's Health. UCLA at Disneyland Hotel, Anaheim, CA. 12 hrs Cat 1. Contact Catarina Prata (310) 312-0518.

COLORADO

To list CME programs here, please send information at least two months in advance to: Mr Robert L. Kennedy, Denver Medical Society, 1850 Williams Street, Denver, CO 80218; or telephone (303) 377-1850. Brochures, course information, and registration forms are available from the contact person or organization.

MAY 2000: 4th Management of Risk Factors for Cardiovascular Disease. Denver, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JUNE 26-JULY 1, 2000: 46th Family Practice Review. YMCA of the Rockies, Estes Park, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 9-12, 2000: 6th Biennial Management of Type I Diabetes. Marriott's Vail Mountain Resort, Vail, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 9-14, 2000: 36th Internal Medicine Program. YMCA of the Rockies, Estes Park, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 21-23, 2000: Genetics and Ethics. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 24-28, 2000: 27th Renal Disease Program. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 28-30, 2000: Neurology for the Non-Neurologist. Sheraton Tamarron Resort, Durango, CO. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

JULY 28-31, 2000: A Comprehensive Review of Movement Disorders for the Clinical Practitioner, 10th Annual Course. Columbian University College of Physicians and Surgeons at Hotel Jerome, Aspen, CO. Contact Columbia University College of Physicians and Surgeons, (212) 781-5990; Fax (212) 781-6047; cme@columbia.edu; http://cpmcnet.columbia.edu/dept.cme.

AUGUST 2-4, 2000: 26th Psychiatry Conference. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

AUGUST 6-13, 2000: Current Concepts in Adult Orthopedic Surgery. The Peaks, Telluride, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

NEW MEXICO

Information, requests for accreditation, and items to be listed should be sent to the chair of the CME Committee, New Mexico Medical Society, 7770 Jefferson, Suite 400, Albuquerque, NM87109, at least two months in advance. For information on CME accreditation or on the CME requirements of the New Mexico Board of Medical Examiners, please write to the above address or call (505) 828-0237.

MAY 25-28, 2000: Mammography in the Next Millennium: Screening and Beyond. La Fonda Hotel, Albuquerque, NM. Contact Ryals and Associates, Inc. (770) 641-9773.

JUNE 28-30, 2000: Santa Fe Summer Psychiatric Symposium. Hotel Loretto, Santa Fe, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

AUGUST 2-4, 2000: Current Concepts in General Surgery. Hilton Hotel, Albuquerque, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

AUGUST 19, 2000: New Mexico Hispanic Medical Association Annual Meeting. Albuquerque, NM. Contact Kelly Little (505) 828-0237.

WASHINGTON

The listing of continuing medical education programs in Washington state is compiled by the Washington State Medical Association. To list Cat 1 programs here, please send information at least two months in advance to Continuing Medical Education, Washington State Medical Association, 2033 Sixth Avenue, Suite 1100, Seattle, WA98121; or phone (206) 441-9762 or (800) 552-0612.

MAY 2000: Alzheimer's Update. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

MAY 18-20, 2000: 4th Annual Cardiac Prevention Conference. Whistler, BC. Contact Providence General Medical Center (425) 261-3690; Jsackett@Providence.org.

JUNE 2000: Northwest Wilderness Medicine. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

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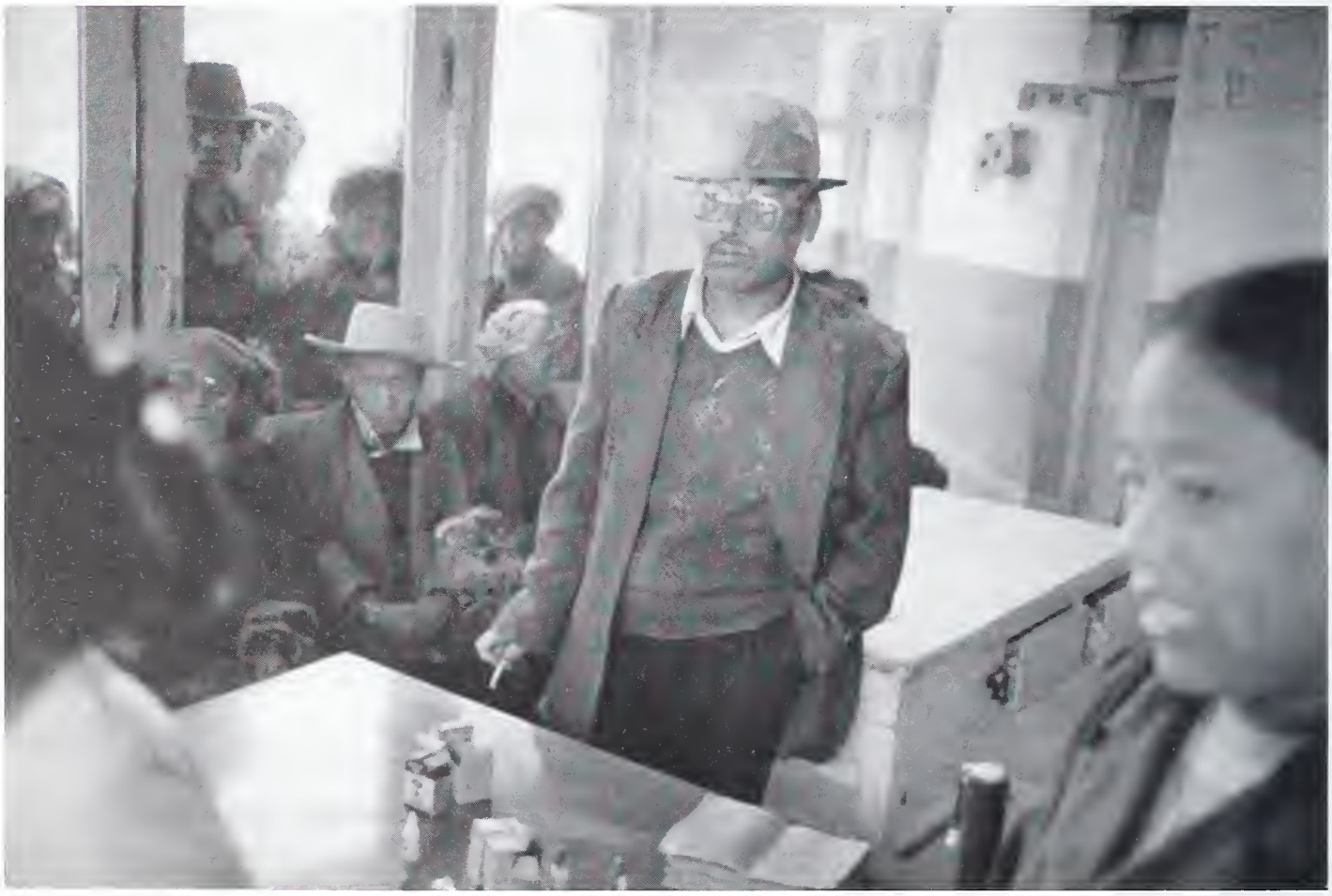
Public health and tobacco in China

David Heiden



The Commissioner of Public Health, Lhokha County, Lhasa Prefecture, Tibet Autonomous Region, Peoples' Republic of China. September 1997.

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western journal of medicine Volume 172 Number 6 June 2000

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This month in wjm

Opening the black box of medical error

Human error occurs in health care settings as in any other complex system. No measure of training, dedication, or punishment can eliminate it. Yet individuals rather than systems are blamed for mistakes, argues Reinertsen on p 356 in the first of three Op-Eds on medical error. On p 358, Wu discusses how doctors themselves are the "second victims" in the aftermath of error, for they can lose their nerve, burn out, or seek solace in alcohol or drugs. Organizational changes are needed, says O'Leary on p 357, to create an environment in which it is safe to admit to mistakes so that we can recover and learn from them.

California emergency rooms are overcrowded

In 1995, 100 million people visited emergency departments in the United States. The numbers are rising by 2% each year. On p 385, Richards et al present the results of a survey of emergency department directors. Nearly all report overcrowding, due to bed and nursing shortages, delays in laboratory testing, and increases in patient acuity and volume. In his commentary on p 388, Kazzi demands that emergency services be given back true control over clinical decisions from the managed care gatekeepers.

The health of patients who are not heterosexual

Health care professionals often assume that their patients are heterosexual. But 10% of the population identify themselves as gay, lesbian, bisexual or transgender. On p 401, Lee outlines how to take a sensitive and inclusive sexual history from a lesbian patient. On p 403, she argues that health care provision to patients who are not heterosexual is suboptimal. She outlines their specific medical needs, and ways to promote their health. We could do more to promote preventive health behaviors in lesbian and bisexual women, says Koh on p 378. Data from her questionnaire survey indicate that these women are less likely to have had cholesterol screening or mammography, and more likely to have used illicit drugs.

A lesson on Vietnamese culture

American physicians are privileged to serve such a culturally diverse population. Beginning her series on caring for patients from different cultures, Galanti, on p 415, educates us on Vietnamese family relationships.

Editor's Pick

As Charatan points out (p 363), American society is at a critical point in caring for our elderly. We finally have medications that can extend life and improve its quality. Many new drugs have been developed exclusively by pharmaceutical investment, although others have benefited from groundbreaking research funded by the federal government. Is there a maximum amount of profit that companies should earn? Should the desire for corporate gain allow prices to escalate unchecked? Should our elderly, the most medication-dependent sector of society, be held hostage to corporate greed?

Drug companies are guilty of creating unnecessary demand for high-priced, poorly evaluated drugs. These days you can't watch the television without coming across a drug ad instructing you to ask your doctor for a prescription. The drug industry spent $905 million on direct-to-consumer (DTC) advertising in the first half of 1999 alone—a 43% increase over spending levels a year earlier. These DTC ads are changing the physician-patient relationship, driving up drug costs, and generating demand for medications for conditions that may best be left untreated, like baldness and toe nail fungus. Where did all these drugs come from?

Since the mid-1980s, drug companies have been experimenting with providing consumers with promotional material. Advertisers first create a fear or demand on the part of consumers. This "concern" then prompts the patient to ask the doctor for a prescription. Finally, the doctor, not wanting to take the time to "re-educate" the patient as to why the drug is inappropriate, complies and writes the prescription. Does it work? You bet. The companies wouldn't spend nearly a billion dollars a year without strong evidence that their strategy increases profits. Research shows that many consumers are aware of these advertisements and act on them.

Is there any good that comes from these advertisements? The manufacturers argue that they are providing society with "public health education" and they are "performing a public service" by teaching people about medical conditions and treatments. Other industry supporters argue that advertisements empower consumers, making them aware that products exist for conditions they may have worried about for years.

Now is the time for Congress, the President, and all sectors of society to agree that the government has an important role to play in health care. If DTC advertising is here to stay, we must all act to curtail the excesses of the drug industry. Urgent action must be taken to lower prescription costs. While doctors are trying to provide compassionate care to the elderly, high drug prices means that physicians' hands are tied behind their backs.

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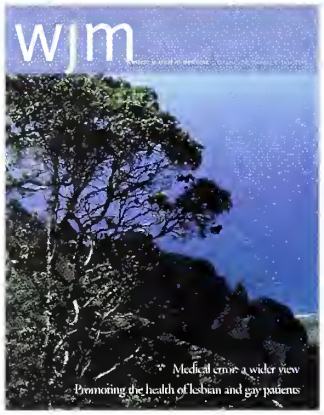

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Op-Ed

Let's talk about error

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2000;172:356-357

In the time it will take you to read this editorial, eight patients will be injured, and one will die, because of preventable medical errors. Medication error—wrong drug, wrong dose, wrong route of administration, wrong patient, or wrong time—is the most common single preventable cause of patient injury. When all sources of error are added up, the likelihood that a mishap will injure a patient in the hospital is at least 3%, and probably much higher.[1-4] This is a serious public health problem. When one considers that a typical airline handles customers' baggage at a far lower error rate than we handle the administration of drugs to patients, it is also an embarrassment.

Given the prevalence of errors in our work, and given also that one of our first principles is "first do no harm," it is strange that we talk so little in our hospitals and clinics about this problem. Perhaps it is because we tend to view most errors as human errors and attribute them to laziness, inattention, or incompetence on the part of those identified as committing the errors. As a result, when we do talk about errors—whether in morbidity and mortality conferences, doctors' lounges, or courtrooms—we seek to place blame. We blame the physician who failed to remember a patient's drug allergy, the surgeon who misplaced a stitch in a bowel anastomosis, and the nurse who failed to read the concentration of adrenaline (epinephrine) on the vial. These blaming conversations are tinged with everyone's fears—of lawsuits, of humiliation, of job loss. While we talk bravely about someone else's negligence, we privately think, "There, but for the grace of God, go I." And so clinicians prefer to talk about something else—almost anything else—than our errors.

We don't talk much about errors because deep down we believe that individual diligence should prevent errors, and so the very existence of error damages our professional self-image. While professionally heroic, this view of errors is simply wrong. Yes, some errors are due to negligence by a doctor or a nurse. But most are latent errors, or errors "waiting to happen," arising from poorly designed processes and systems of care.[5] If the doctor who failed to remember the allergy had access to a current medical record, or to a computerized order entry system, might that information have stopped him or her from prescribing the wrong drug? Was the leaky anastomosis done after the surgeon had been working for 28 hours without sleep or in an operating room in which the nursing, anesthesia, and surgical teams were at war? When the nurse reached for the 1:10,000 vial of epinephrine during the emergency, why was the 1:1,000 concentration on the same resuscitation cart?

Overreliance on memory, denial of the overwhelming evidence linking fatigue to poor performance, "fighting in the cockpit," and placing look-alike doses of medications next to one another on a cart are classic failures of process and system design. Although the individual professional is the final pathway by which these errors happen, errors are designed into our systems and are waiting to be made, if not by you, then by the next doctor or nurse. If "attention is the currency of leadership,"[6] all of us who have leadership roles have a responsibility to direct the attention of our fellow physicians, health care professionals, and communities to this problem and to keep attention on the problem until it is satisfactorily resolved. What would it look like if leaders were to direct attention to the issue of medical error? Health care leaders and managers would feel personally responsible for error. Rather than assigning blame to the unfortunate individuals who find themselves at the sharp end of an error, leaders would take personal responsibility for the safety of the processes and systems in which those individuals work.[7]

Our organizations would declare error reduction to be an explicit organizational goal, and a significant proportion of the board and management agenda would be devoted to achieving this goal. Reported error rates would go up for awhile because we currently underreport errors and near misses by a factor of 10.[8] We would feel good about this increase in the number of errors because we would finally be uncovering the real extent of the problem. When errors occur, we would learn and prevent, rather than blame and hide. Our grand rounds, morbidity and mortality conferences, medical meetings, and professional journals would prominently feature experts on error reduction, process improvement, and system design. Hospitals and clinics, with our guidance and leadership, would urgently implement the best-known practices in patient safety and error reduction and begin to invent the next level of knowledge. Our patients would be injured less often, and health care costs would go down considerably.[9,10] Leaders lead by channeling attention—it is time for health care leaders to channel attention toward our error-prone health care systems. Let's talk about it.

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Accreditation's role in reducing medical errors

Accreditors can provide some leadership, but they can't do it on their own

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West J Med
2000;172:357-358

The admonition "First, do no harm," paraphrased from the Hippocratic oath,[1] has long been a guiding principle for the practice of medicine and the delivery of health care services around the world. But harm is done every day in health care. This has been well documented in the medical literature.[2] Now public awareness of medical errors and unexpected adverse patient outcomes is growing.[3] We have a serious problem, and it cries for timely, effective solutions. No one feels this more keenly than practicing physicians, health care executives, and the overseers of health care quality. Effective solutions, however, are proving to be a daunting challenge.

The oversight of health care quality in the United States is accomplished both through professionally based accrediting bodies in the private sector and through federal and state regulatory agencies. Many variations of this framework are now increasingly in evidence throughout the world. The initial model for external quality oversight in the United States was created by physicians in 1917. The resulting hospital standardization program of the American College of Surgeons was the forerunner in the United States of both the national Joint Commission on Accreditation of Healthcare Organizations and the federal and state regulatory framework now in place for all types of health care organizations.[4]

While these parallel oversight mechanisms are potentially duplicative, regulatory agencies commonly defer to accrediting bodies that meet their performance criteria. Although couched in the language of continuous quality improvement, the accreditation process is, at its core, a risk reduction activity. It begins with the setting of contemporary standards that address important organizational functions—for example, patient assessment, medication usage—and then encourages organizations, through the awarding of accreditation, to comply with these standards. The operating thesis is that if organizations are doing the "right things right," as reflected in the standards, then errors and adverse outcomes are less likely to happen than if there were no such standards. Notwithstanding the continued high frequency of errors, this thesis is almost certainly correct.[5] We are simply at a more primitive stage than we would like to be in our knowledge of why what happens happens in health care organizations.

It has become too easy to accept some (undefined) degree of medical errors as the inevitable by-product of today's increasingly complex patient care and simply to blame and punish individual caregivers when things go seriously wrong. Leaders of the medical profession and of health care organizations do not include reducing medical errors among their top priorities. Therefore, the level of commitment to analyzing relationships between errors and adverse outcomes on the one hand and organizational systems and processes on the other has so far been modest. There is now a growing urgency to undertake such analyses, to assimilate and share the knowledge gleaned, and then to use that information to design and redesign safer organizational infrastructures that minimize the potential impact of human factors in the delivery of care.[6]

Changing existing attitudes, behaviors, and priorities toward the identification and management of medical errors lies well beyond the "control" of accrediting bodies or regulatory agencies. Nevertheless, because of their roles as agents of public accountability, such oversight bodies for external quality do have the ability to foster constructive change in health care organizations. For example, largely through a voluntary self-reporting system, the Joint Commission on Accreditation of Healthcare Organizations has developed a database of serious adverse events and of the results of organizational analyses of these events. We periodically share the lessons learned with all accredited organizations.[7]

This simple effort to translate negative results into use-

ful information that can prevent errors in multiple settings is easily replicable anywhere in the world. Mandatory reporting of these occurrences and related analyses would rapidly produce an even richer database, but without the guarantee of confidentiality for the analyses (which does not currently exist), the evidence suggests[8] that the analyses would probably not be performed with the desired degree of thoroughness. The joint commission has also recently introduced the requirement that each accredited organization should establish reporting channels for unexpected adverse occurrences, perform an in-depth analysis of each such occurrence, implement improvements, and assess the impact of the improvements on internal systems and processes. This requirement should move error and adverse event management up leaders' lists of priority and help accredited organizations begin to learn more about themselves.

In the end, however, what we most need is a characteristic not described by Hippocrates—the ability of care givers to admit and accept fallibility. Furthermore, the organizations in which care is provided must create environments in which it is "safe" to admit error and safe as well to explore why the error occurred. In a sense, we need to extend the peer review collegiality inherent in the classic morbidity and mortality conference to the context of the entire organization. Simply stated, if we truly expect to improve the safety of patient care, those who directly provide the care must engage in the improvement process and feel safe in doing so.

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Medical error: the second victim

The doctor who makes the mistake needs help too

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Competing interests: None declared

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When I was an intern, a resident failed to identify the electrocardiographic signs of the pericardial tamponade that would rush the patient to the operating room late that night. The news spread rapidly, the case tried repeatedly before an incredulous jury of peers, who returned a summary judgment of incompetence. I was dismayed by the lack of sympathy and wondered secretly if I could have made the same mistake—and, like the hapless resident, become the second victim of the error.

Strangely, there is no place for mistakes in modern medicine. Society has entrusted physicians with the burden of understanding and dealing with illness. Although it is often said, "doctors are only human," technological wonders, the apparent precision of laboratory tests, and innovations that present tangible images of illness have in fact created an expectation of perfection. Patients, who have an understandable need to consider their doctors infallible, have colluded with doctors to deny the existence of error. Hospitals react to every error as an anomaly, for which the solution is to ferret out and blame an individual, with a promise that "it will never happen again." Paradoxically, this approach has diverted attention from the kind of systematic improvements that could decrease errors. Many errors are built into existing routines and devices, setting up the unwitting physician and patient for disaster. And, although patients are the first and obvious victims of medical mistakes, doctors are wounded by the same errors: they are the second victims.

Virtually every practitioner knows the sickening realization of making a bad mistake. You feel singled out and exposed—seized by the instinct to see if anyone has noticed. You agonize about what to do, whether to tell anyone, what to say. Later, the event replays itself over and over in your mind. You question your competence but fear being discovered. You know you should confess, but dread the prospect of potential punishment and of the patient's anger. You may become overly attentive to the patient or family, lamenting the failure to do so earlier and, if you haven't told them, wondering if they know.[1-3]

Sadly, the kind of unconditional sympathy and sup-

port that are really needed are rarely forthcoming. While there is a norm of not criticizing,[4] reassurance from colleagues is often grudging or qualified. One reason may be that learning of the failings of others allows physicians to divest their own past errors among the group, making them feel less exposed.[5] It has been suggested that the only way to face the guilt after a serious error is through confession, restitution, and absolution.[6] But confession is discouraged, passively by the lack of appropriate forums for discussion, and sometimes actively by risk managers and hospital lawyers. Further, there are no institutional mechanisms to aid the grieving process.

Even when mistakes are discussed at morbidity and mortality conferences, it is to examine the medical facts rather than the feelings of the patient or physician. In the absence of mechanisms for healing, physicians find dysfunctional ways to protect themselves. They often respond to their own mistakes with anger and projection of blame and may act defensively or callously and blame or scold the patient or other members of the health care team. Distress escalates in the face of a malpractice suit. In the long run, some physicians are deeply wounded, lose their nerve, burn out, or seek solace in alcohol or drugs.[6]

My observation is that this number includes some of our most reflective and sensitive colleagues, perhaps most susceptible to injury from their own mistakes. What should we do when a colleague makes a mistake? How would we like others to react to our mistakes? How can we make it feel safe to talk about mistakes? In the case of an individual colleague, it is important to encourage a description of what happened and to begin by accepting this assessment and not minimizing the importance of the mistake. Disclosing one's own experience of mistakes can reduce the colleague's sense of isolation. It is helpful to ask about and acknowledge the emotional impact of the mistake and ask how the colleague is coping. If the patient or family is not aware of the mistake, the importance of disclosure should be discussed.

The physician has an ethical responsibility to tell the patient about an error, especially if the error has caused harm.[7] We should acknowledge the pain of implementing this imperative. We can, however, convey the great relief it can be to admit a mistake, and that, confronted by an empathic and apologetic physician, patients and families can be astonishingly forgiving. Only then is it appropriate to approach the mistake with a problem-solving focus and to explore what could have been done differently and what changes can be made at the individual and institutional level to prevent recurrence.

In the case of the misread electrocardiogram, the educational and emotional experience for the resident—and the team—would have been transformed if a respected senior clinician had led an open discussion of the incident and acknowledged the inevitability of mistakes. Nurses, pharmacists, and other members of the health care team are also susceptible to error and vulnerable to its fallout. Given the hospital hierarchy, they have less latitude to deal with their mistakes: they often bear silent witness to mistakes and agonize over conflicting loyalties to patient, institution, and team. They, too, are victims.

I'll conclude with an assignment for the practicing doctor: think back to your last mistake that harmed a patient. Talk to a colleague about it. Notice your colleague's reactions and your own. What helps? What makes it harder? Physicians will always make mistakes. The decisive factor will be how we handle them. Patient safety and physician welfare will be well served if we can be more honest about our mistakes to our patients, our colleagues, and ourselves.

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capsule

Festive weight gain Urban myth has it that the average American gains 5 pounds between Thanksgiving and New Year's. The real figure is less than a quarter of that, but it's still enough to cause a substantial spare tire when multiplied over a lifetime, write researchers from the US National Institutes of Health (*N Engl J Med* 2000;342:861-867). Volunteers in a study of holiday excess overestimated their weight gain by about 400%—but this did not inspire them to lose any of it over the following summer.

In the Public Eye

News and Features

Unsupervised nurses may soon give anesthetics

Deborah Josefson, New York, NY debdoc@aol.com

Nurse anesthetists may soon be able to give anesthetics to some patients without the supervision of a doctor. After deliberating for more than 2 years, the Health Care Financing Administration, which provides health insurance to an estimated 74 million Americans through the Medicare, Medicaid, and State Children's Health Insurance Programs, has announced that it will remove the requirement that all nurse anesthetists who provide anesthesia to Medicare patients must be supervised by a physician.

Until now, when anesthesia was administered to patients with Medicare, nurse anesthetists had to be supervised by physicians in order for hospitals and ambulatory surgery centers to be reimbursed for the nonanesthesia portion of the care. This rule has been in effect since 1966 when the Medicare program was established. The agency first proposed changing the rule in December of 1997. Under the proposal, individual states will have the authority to decide whether or not nurse anesthetists should be supervised.

The announcement was met with alarm by anesthesiologists, who fear that a lack of supervision by physicians will compromise the quality of care. It was, however, supported by nurse anesthetists, who contend that certified nurse anesthetists deliver safe, high-quality anesthesia on a par with that of anesthesiologists but at lower cost.

Certified registered nurse anesthetists are advanced practice nurses with graduate level education. According to the American Association of Nurse Anesthetists, they deliver about 65% of the 26 million anesthetics given annually in the United States and most of the anesthesia in rural areas. Over the past 2 years, the association has lobbied the agency for the passage of the rule, emphasizing that advances in monitoring equipment, pharmaceuticals, and anesthesia education have greatly improved safety. For instance, 20 years ago, there was 1 death for every 10,000 people who had anesthesia, whereas today, the death rate is 1 in 240,000.

Ronald Mackenzie, president of the American Society of Anesthesiologists, agreed that the safety of anesthesia has improved greatly, but pointed out that this level of safety was achieved only with the involvement of anesthesiologists. He criticized the agency's decision and indicated that a recent but as yet unpublished study involving 65,000 Medicare patients in 219 hospitals in Pennsylvania had found that there was a 28% higher death rate among patients given anesthetics by unsupervised certified registered nurse anaesthetists.

The association and other doctors are lobbying Congress to pass a bill, the Safe Seniors Assurance Study Act of 1999, which will reverse the agency's decision. It has also called for a national study comparing the safety outcomes of the two groups, but because of the scarcity of complications overall, the under-

John Griem/Science Photo Library

Certified nurse anesthetists provide quality care with or without supervision

taking was deemed to be too costly in 1990 by the Centers for Disease Control. Moreover, in 1994, a study by the Minnesota Department of Health found that there were no studies, either national or specific to Minnesota, that conclusively found a difference in outcomes of patient care when anesthesia was delivered by either of the two types of providers.

The Health Care Financing Administration claims that its proposal will not affect the quality of care but only defer the scope of practice to states. Mackenzie, however, argues that because Medicare is a national program, national standards should apply. "This is about people, not government. It is about patients' rights, not states' rights: the right of Medicare beneficiaries in every state to the best available medical care during anesthesia. If the [Health Care Financing Administration's] proposal is approved, Medicare patients would be subjected to potentially 50 different levels of anesthesia care in this country, not only [according to] where they live but [also] where they may travel [to] as well," Mackenzie said.

George W Bush proposes insurance help for the poor

Fred B Charatan, Florida

Republican presidential candidate, George W Bush, has proposed up to $2000 in tax credits to help poor families earning less than $30,000 to buy health insurance.

The tax credit would cost an estimated $34.7 billion over 5 years, and campaign aides said that it would help as many as 18 million uninsured Americans to buy health insurance. Vice President Al Gore attacked Mr Bush's record as Texas governor, saying that with his new proposal he was trying to "divert attention from the deplorable state of health care and other issues in Texas."

Democrats said that Mr Bush is especially vulnerable on the issue because his state has the country's second highest number of uninsured people and some of the highest rates of AIDS, tuberculosis, and diabetes.

The Texas health commissioner, Dr William Archer 3rd, in an interview about the same time, said among other things that Texas's high teenage pregnancy rate had come about because the state's Hispanic population lacked the belief that "getting pregnant is a bad thing."

Later, Archer issued a statement of apology. "I deeply regret that I have created an erroneous impression about Hispanics and teen pregnancy," he said.

Diane Rowland of the Henry J Kaiser Family Foundation and a leading professional on health care costs was doubtful about how much insurance the tax credits would cover. She said that the average cost in 1998 for a group family policy was $4092. That is what fairly large employers would have to pay, but individuals buying family health insurance would find the cost of premiums much higher. Less expensive policies "would not cover much."

Mr Bush has said nothing about prescription drug benefits under Medicare, but his aides said that he would address that issue later in the campaign.

FDA committee recommends approval for Viagra rival

Scott Gottlieb, New York

A committee of specialists at the US Food and Drug Administration (FDA) has recommended that the administration proceed with the approval of Uprima (apomorphine), a new drug for impotence that doctors predict will compete strongly with the highly popular drug sildenafil (Viagra).

The administration usually follows its panel's advice and is expected to decide by July whether Uprima can be sold in the United States. The panel's support, however, came on condition that the manufacturer, TAP, based in Illinois, provides strong warnings to patients about possible serious side effects.

Placed under the tongue, Uprima encourages erections by stimulating the release of dopamine, which mediates the cerebral role in triggering erections. Although Uprima is new, its active ingredient, apomorphine, has been used for various disorders for many years.

In medical studies, almost 60% of men taking Uprima had an erection, whereas only 35% of men taking a placebo were able to achieve an erection successfully. A major area of concern was Uprima's safety profile, not its effectiveness. Nausea was seen in 32% of the men and dizziness and sweating in about 15%; 60% of the men had to drop out of the studies owing to side effects. Most of these side effects, however, occurred in men taking at least 5 mg of the drug. If approved, Uprima will be sold in doses of 2 mg to 4 mg.

Uprima also seemed to interact with nitrates and alcohol, leading to concerns about the potential for more serious side effects, such as syncope, hypotension, and bradycardia.

"[Erectile dysfunction] is a major quality of life issue," said the committee's chairman, Ricardo Azziz. Although this drug may need to be used only in certain men, there is no question that it had a definite benefit, he said.

Bypass grafts protect diabetic patients better than angioplasty

Scott Gottlieb, New York

People with diabetes who have coronary artery disease fare much better after bypass surgery than after balloon angioplasty, according to a new report.

A second report, based on the same study as the first report, found that diabetic patients taking medication who have had coronary bypass surgery are more likely to survive a subsequent heart attack than are diabetic patients who have undergone angioplasty instead.

The results given in both reports come from the bypass angioplasty revascularization investigation (BARI), a 13-year study of patients randomly assigned to undergo either bypass surgery or angioplasty.

Researchers had previously reported that the survival rate 5 years after treatment was similar for both types of treatment. But among the 353 diabetic patients in the study, researchers had found that those who had had angioplasty were much less likely still to be alive than those who had bypass surgery.

In both of the reports, the lead author of the BARI trial, Katherine Detre of the University of Pittsburgh in Pennsylvania, followed the participants for an additional 2 years to see if these differences continued.

In the first report, researchers followed about 2000 patients for an additional 2 years and found that the type of intervention made no difference to survival except in the case of diabetic patients. Diabetic patients did worse in both respects—mortality and heart attacks.

For diabetic patients, the 7-year survival rate was 76.4% in the bypass group and about 55.7% in the angioplasty group; among patients who did not have diabetes, the survival rates were 86.4% and 86.8%, respectively (*J Am Coll Cardiol* 35:1122-1129,1130-1132).

Detre said that survival rates also varied among diabetic patients who had undergone angioplasty, depending on how their diabetes was treated. Compared with diabetic patients who took oral diabetes drugs, those who used insulin injections fared worse after angioplasty. People taking insulin might have had more severe diabetes, but she and her colleagues were not able to verify this.

Because most of the people in the BARI trial were not diabetic and many advances in the treatment of heart disease have occurred since the study was conducted, researchers plan a new study that will include only people with diabetes.

The conclusions in Detre's second study were also based on an assessment of patients enrolled in the BARI trial and included both diabetic and non-diabetic patients. Among diabetic patients who had heart attacks after the start of the study, Detre found that mortality 5 years after the heart attack was 17% for those who had undergone bypass surgery compared with 80% for those who had undergone angioplasty (*N Engl J Med* 2000; 342:989-997).

Both types of coronary revascularization resulted in an immediate increase in the amount of heart muscle receiving blood flow. But investigators noted that after 1 year, the vessels of the patients who had undergone bypass surgery remained open to a greater degree, thus protecting them somewhat from the sequelae of a second heart attack.

The findings published in both reports were based on data collected before newer innovations in coronary angioplasty. The researchers noted that newer research shows that stents keep blood vessels open longer.

In an accompanying editorial to the second report, Steven Haffner of the University of Texas in San Antonio said that stents could improve survival among diabetic people who had heart attacks. Detre's group is planning a study that will test that theory.

ANY QUESTIONS?

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ANY ANSWERS?

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Whatever questions, comments, or other contributions you have, we'd like to receive them. We realize that it's experience like yours that makes the journal come alive. Please send your questions, ideas, or comments to us by email: wjm@ewjm.com.

Medicine and Money

The high price of aging

A 78-year-old Vermont woman with breast cancer, hypercholesterolemia, and arthritis must pay nearly $300 a month for prescription drugs at her local pharmacy. But if she takes a bus trip into Canada, the same prescriptions will cost only half as much.

Public Citizen, a nonprofit Washington watchdog group, invited US presidential candidates to join a "Drug Price Refugee" bus trip to Canada last January. The trip was arranged for New Hampshire seniors, who were paying over double the price charged to such favored customers as HMOs and the Departments of Defense and Veterans Affairs. Medicines are cheaper in Canada because the Canadian government negotiates substantially lower drug prices with pharmaceutical manufacturers.

Medicines are cheaper in Canada because the Canadian government negotiates substantially lower drug prices with pharmaceutical manufacturers

Congressman Bernard Sanders, Independent from neighboring Vermont, recalled, "You can't walk down a main street in Vermont without someone coming up and saying, 'Bernie, you've got to do something about the high cost of prescription drugs.' "

On the West Coast, Republican Senator Slade Gorton of Washington State said his constituents often go across the Canadian border to buy cheaper drugs: "I was astounded to learn that for the top 10 most commonly prescribed drugs, average prices are 64% lower in Canada than in Washington State. That is outrageous."

President Clinton is trying to extend the Medicare program so that it partially covers the high cost of prescription drugs. On April 10, Clinton released a new study by the Department of Health and Human Services showing that Medicare beneficiaries without drug coverage lack insurance against high costs. They also have no access to the discounts and rebates that insured persons receive. Medicare recipients without drug coverage are also five times more likely to report being unable to purchase prescription drugs as those with coverage. In addition to the millions of completely uninsured, nearly half of seniors with Medigap did not have their coverage for the entire year. Because of the limited information about price discounts, the Department of Health and Human Services will hold a conference this summer that will focus on prescription drug pricing practices.

Prescription drug spending and utilization are growing rapidly, more than twice the growth in funds spent in other areas of health care. Nationwide spending on medicines increased at an annual rate of 12% from 1993 to 1998, compared with 5% for all other types of health spending. Prescription drugs now account for one sixth of all out-of-pocket health spending by the elderly (http://aspe.hhs.gov/health/reports/drugstudy).

One in eight seniors cannot afford the cost of prescription drugs

Currently, one third of Medicare beneficiaries have no drug coverage at all. Older Americans constitute 13% of the population, but this segment of our society accounts for more than one third of the nation's drug expenditure.

AP/Stephan Savoia

99-year-old Ruth McPherson, pictured listening to Senator John McCain, is the oldest resident of Atkinson, New Hampshire. Will politicians cut her prescription costs?

The National Committee to Preserve Social Security and Medicare, with over 5 million members, found that one in eight seniors cannot afford the cost of prescription drugs. These include the wide array of new cardiac drugs, diuretics, psychoactive drugs, and gastrointestinal preparations, which are not covered by Medicare. Seniors must pay for these prescriptions directly.

In Washington, the issue has finally been acknowledged. Currently, 29 bills relating to Medicare and prescription drug coverage are before the House and Senate. Clinton's plan, which has yet to become law, would give Medicare beneficiaries the option to pay for a prescription drug benefit that would cover half of all drug costs up to $5,000 when fully phased in, including a stop-loss provision to protect seniors against catastrophic drug costs. The hope is that the premiums would be affordable, perhaps $44 per month, to both beneficiaries and the program, and seniors would be able to gain access to needed medications. The president's plan also includes reforms to make Medicare more competitive and efficient. He promotes dedicating $432 billion to Medicare to help pay for the prescription drug benefit and to improve the program's financing, with the goal of extending the life of its trust fund to the year 2030.

Prescription drugs now account for one sixth of all out-of-pocket health spending by the elderly

The pharmaceutical industry opposes Mr Clinton's plan. Its spokesperson, Alan Holmer, said: "Loss of profits through price controls would inevitably lead to an adverse impact on pharmacological research . . . and create a disincentive for the industry to invest in the diseases of aging."

Public Citizen says that the industry spent $30 million last year to plaster the fictitious senior "Flo" on television and in full-page newspaper advertisements. The accompanying message said: "Keep big government out of your medicine cabinet."

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A book to make you think

Blind Eye: How the Medical Establishment Let a Doctor Get Away with Murder James B Stewart, Simon and Schuster, $17.50, pp 334

There is ample precedent for physicians flouting the Hippocratic admonition, "First, do no harm," and, directly or indirectly, accounting for multiple deaths. Dr Joseph Mengele's handiwork has been much documented; more vicariously, Dr Joseph Guillotin's invention did away with a fair number of folk, as did Dr Richard Gatling's gun, which fired 350 shots a minute.

But Dr Michael Swango, the subject of this meticulously researched and highly readable book, was a fully fledged psychopath who killed for the sheer thrill of it. And even though as many as 60 fatal poisonings could be attributed to him, his charm and glib persuasiveness allowed him to move on with impunity from one medical institution to another. As a medical student at Southern Illinois University, he became known as "Double-0 Swango, licensed to kill" after 5 patients under his care died mysteriously.

At each hospital, the huge cloud of suspicion that enveloped Swango was wafted away by physicians and administrators fearful of litigation and sullied reputations. Even today, he's serving a jail term not for murder but for possession of narcotics and fraud and could be at large again soon.

That a blind eye could have been turned to Swango's persona and record is remarkable and somewhat chilling. He was fascinated by Nazism, the Holocaust, and serial and mass killers such as Jim Jones, the charismatic leader of the People's Temple, whose thousand-odd followers he persuaded to commit mass suicide in 1978. Swango kept a scrapbook of pictures of gory car crashes and collected an arsenal of weapons and an assortment of poisons in his apartments.

The cover up was worst at Ohio State University, the prestigious medical school where Swango was admitted to an internship. Despite a number of suspicious deaths reported by nurses who had seen Swango enter the patients' rooms with a syringe, the administration dismissed the concerns as gossip and overreaction. Fearful of the public relations damage and possible loss of funding, they closed ranks and later refused any cooperation with Pulitzer Prize winning author Stewart. In 1986, Swango's license to practice medicine was suspended when he went to prison for attempting to poison his coworkers, yet when he was released in 1987, he was able to enter a residency in internal medicine in South Dakota. Even though his past caught up with him there, he went on to secure a psychiatric residency in New York state, before fleeing to Zimbabwe, where he was again suspected of poisoning patients and again dismissed. Incredibly, he moved on to practice in Zambia, where he was suspected and fired once again.

Stewart's is a cautionary tale calling for urgent and stringent legislation and improved reporting mechanisms so that checks on rogue physicians won't continue to be thwarted by fear of litigation and bad press, and by a closing of ranks and a suspension of belief by fellow doctors.

David Woods Healthcare Media International, Philadelphia, PA

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Mail

Better clinical management of anorexia nervosa in teens

To the Editor

In their recent *wjm* paper on eating disorders in adolescents, Brown and colleagues discussed key issues in diagnosis and clinical management.[1] There were two important issues, however, that they failed to address.

Firstly, although the authors state that their data are relevant to adolescents with anorexia nervosa, it is important to remember that some patients present with partial syndromes. These are classified by the American Psychiatric Association as "eating disorders not otherwise specified."[2] Patients with partial syndromes do not have all of the clinical manifestations that characterize the classical subtypes of eating disorders, but their medical complications are the same as those of anorexia nervosa. Patients with partial syndromes may not show the usual overvalued ideas that are common in the classic anorexia nervosa syndrome,[3] and they are therefore able to correct their pathologic thoughts about "becoming too fat." Indeed, in some cases, gentle discussion with patients may assist them in changing their maladaptive eating behavior, with consequent clinical improvement.

Secondly, the authors suggest that most adolescents with eating disorders can be treated as outpatients. They recommend that hospitalization be reserved only for those teens whose weight loss has been rapid or intense, or for those adolescents with cardiovascular arrhythmias.

Although this is good clinical advice, clinicians should remember that a change in the patient's environment may be therapeutic, particularly if patients are experiencing difficulties in the home setting.[4] Perhaps hospital-based day programs for eating disorders would offer the best compromise.

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Author's response

Dr Vale astutely reminds us of the large group of patients with "eating disorder, not otherwise specified." In general, the same reasons why the clinical manifestations seen in these patients do not meet the clinical definition of anorexia nervosa also explain why the associated medical complications are often less severe. Further, although hospital-based day programs do have a role to play in the treatment plan for these adolescents, the constraints imposed by insurance plans offered through managed care organizations compel physicians to advocate the most appropriate level of care. Care for their patients with anorexia nervosa can range from inpatient medical hospitalization to psychiatric hospitalization or day-based programs. Alternatively, it is reasonable to effect completely office-based interventions for patients who are the most stable and whose eating disorder is not severe.

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Med.Pix

Itchy bumps on the back

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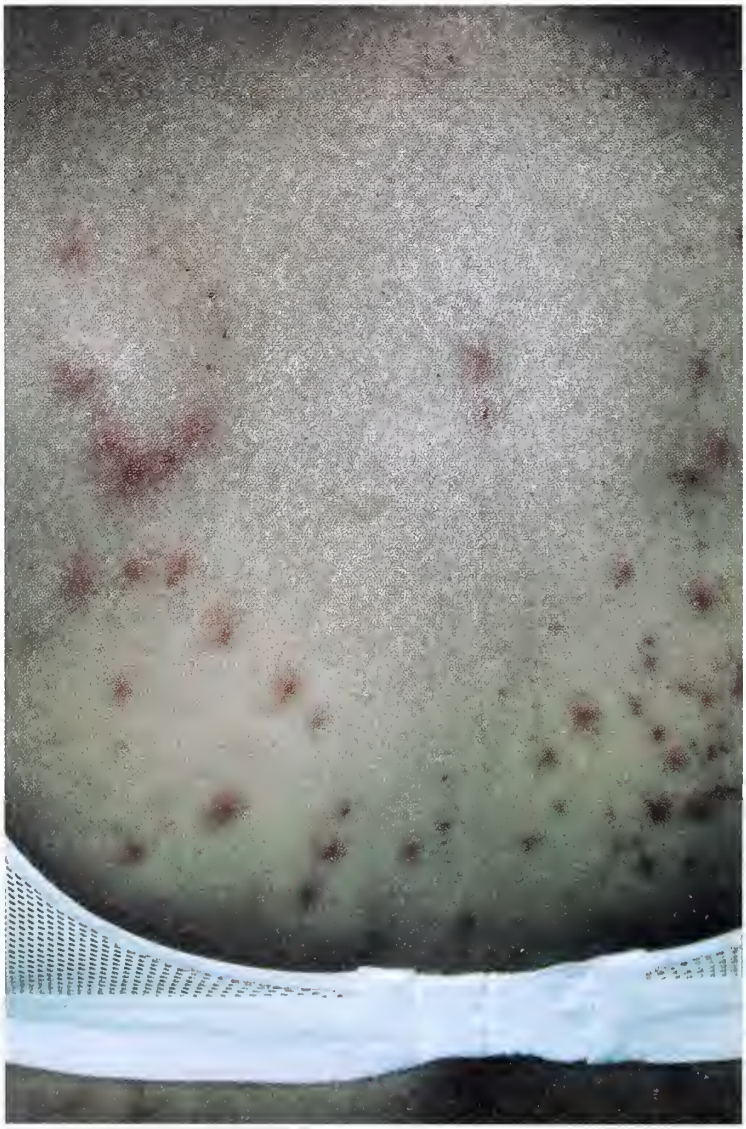
QUESTION: A 51-year-old woman is seen because of a 3-day history of itchy bumps on her back. She says that she awakened 3 days ago with itching on her back and noticed red bumps on her back only. She has no idea how this rash started and has no previous history of a similar rash. She is otherwise in good health, has no fever, chills, or other systemic symptoms, and is not taking any medications. She has no history of allergy to medications, foods, or other substances. She says she has not had any unusual foods and has not started to use any new soaps, laundry detergents, or topical preparations. She has not worn any new clothing in the past week. She has not gone camping or hiking in the past month.

Examination reveals an erythematous papular eruption with possible pustules confined to the back (see figure). There were no burrows between the fingers, no nail changes, and no scaling.

What essential question remains to be asked to make this diagnosis? What is the appropriate treatment of this rash?



Itchy red bumps were on the back only

ANSWER: Careful examination with an optical loupe showed that the lesions were perifollicular, and some were pustular. The essential question was asked: "Have you recently spent time in a hot tub or spa?" The patient replied in wonderment, "How did you know that, and what does a hot tub have to do with this rash?" In fact, she said that she had been in her friend's hot tub twice just before this rash broke out. She was unaware if any of her other friends had a rash.

The patient has *Pseudomonas* folliculitis, which is also called "hot tub folliculitis." Although this is usually caused by *P aeruginosa,* a culture is not needed to establish this diagnosis. This can be a difficult diagnosis to make unless the pattern is recognized and the essential question asked about exposure to a hot tub. Other sources of this infection include contaminated loofah sponges and diving suits.

The differential diagnosis for a pruritic erythematous papular eruption is vast. Some of the more common possibilities include viral exanthemas; scabies; various fungal infections; and allergic reactions to medication, foods, soaps, laundry detergents, topical preparations, plants, or clothing. The use of magnification to determine that the lesions were visible around hair follicles and that some were pustular helped to make this diagnosis. The primary morphologic characteristics of *Pseudomonas* folliculitis include papules, pustules, urticarial plaques, macules, and vesicles.

Folliculitis can also be caused by other bacterial organisms, such as *Staphylococcus aureus* and *Streptococcus pyogenes*. A specimen may be taken from some pustules for bacterial culture if the causative agent is uncertain. If the rash is scaly, a scraping for a potassium hydroxide preparation may be helpful to look for *Pityrosporum* species (a superficial yeastlike organism that can cause folliculitis).

TREATMENT

In most cases, folliculitis caused by *Pseudomonas aeruginosa* will resolve spontaneously within 10 days.[1] In severe cases, an oral antipseudomonal antibiotic, such as a fluoroquinolone, may be prescribed. In this case, the physician and patient decided together to allow the folliculitis to resolve on its own. The patient did not want to use an antibiotic unless it was absolutely necessary. The physician suggested that the patient might use oral diphenhydramine hydrochloride (Benadryl) to treat the itching, if needed. Prevention requires meticulous cleaning of the hot tub and appropriate water chemical management.

The patient called the physician a week later to report that the rash had disappeared, but some residual discoloration still remained. The physician reassured her that the residual discoloration, which is due to postinflammatory hyperpigmentation, should fade during the coming months.

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Note: If the patient's identity is recognizable, a signed permission form should accompany the submission materials.

capsule

Teen passengers are a hazard to the driver Teenage drivers are most likely to be killed when they have a car full of passengers, according to an analysis of routine data collected by the US government (*JAMA* 2000;283:1578-1582). Carrying three or more passengers triples a teenager's risk of a fatal accident, a risk that is already much higher than that of older drivers. The researchers speculate that peers in the back seat provoke riskier driving, including speeding, skidding, jumping red lights, and drinking.

Original Research

Prevalence of HIV infection, sexually transmitted diseases, and hepatitis and related risk behavior in young women living in low-income neighborhoods of northern California

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ABSTRACT **Objective** To estimate the prevalence of human immunodeficiency virus (HIV) infection, sexually transmitted diseases, and hepatitis and the associated sexual and drug-using behavior among women residing in low-income neighborhoods in 5 northern California counties. **Methods** From April 4, 1996, to January 6, 1998, women aged 18 to 29 years were recruited door-to-door from randomly selected street blocks within 1990 census block groups below the 10th percentile for median household income for each county. **Results** Of 24,223 dwellings enumerated, contact was made with residents from 19,546 (80.7%). Within contacted dwellings, 3,560 eligible women were identified and 2,545 enrolled (71.5%). Weighted estimates for disease prevalence were HIV infection, 0.3% (95% confidence interval, 0.1%-0.4%); syphilis, 0.7% (0.3%-1.1%); gonorrhea, 0.8% (0.3%-1.3%); chlamydia, 3.3% (2.4%-4.8%); herpes simplex virus, type 1, 73.7% (71.6%-76.9%); herpes simplex virus, type 2, 34.4% (29.9%-39.0%); hepatitis A, 33.5% (28.3%-38.7%); chronic hepatitis B, 0.8% (0.3%-1.2%); and hepatitis C, 2.5% (1.4%-3.6%). Condom use at last sexual intercourse with a new partner was reported by 44.0% (33.9%-54.1%). Injection drug use in the last 6 months was reported by 1.8% (1.0%-2.7%). **Conclusions** The Young Women's Survey provided population-based estimates of the prevalence of 8 infectious diseases and related risk behavior within a population for whom data are often difficult to collect. Population-based data are needed for appropriate targeting and planning of primary and secondary disease prevention.

INTRODUCTION

Data from diverse sources—human immunodeficiency virus (HIV) and/or acquired immunodeficiency syndrome (AIDS) case reporting, the HIV Family of Surveys[1]—point to an increasing burden of HIV disease and high potential for further transmission among women in the United States. Minority women who are economically disadvantaged are disproportionately affected by HIV.[2-9] Similarly, the prevalence of sexually transmitted diseases, which are markers for HIV risk, is high among young women who reside in low-income areas throughout the United States.[10-13]

Few population-based estimates are available to assess the current prevalence of HIV infection or to gauge the potential of the epidemic to expand. Population-based data are also needed to appropriately target and plan primary and secondary prevention efforts. We report data collected from young women living in low-income neighborhoods in 5 counties of northern California using a single-stage cluster sampling method. This method was developed to provide a logistically feasible way of estimating the prevalence of HIV, sexually transmitted diseases, and other diseases and related risk factors for this hard-to-reach population.

PARTICIPANTS AND METHODS

Overall design

The Young Women's Survey (YWS) was a 1-stage, cluster-sample, population-based, door-to-door, cross-sectional survey of the prevalence of HIV infection, sexually transmitted diseases, hepatitis A, B, and C, and related risk behavior. The YWS protocol was reviewed, approved, and monitored by the Committee for the Protection of Human Subjects for the State of California Health and Welfare Agency. Participants provided informed consent.

Study population

Eligibility criteria included female sex, age 18 to 29 years, fluency in English or Spanish, and residency in a low-income neighborhood in northern California. Residency was defined as staying at a dwelling the previous night and having no other home. Dwellings included permanent residencies and single resident occupancy units within hotels, makeshift shelters, and "squats" in abandoned buildings.

Sampling design

Five counties in northern California participated: Alameda, Contra Costa, San Francisco, San Joaquin, and San

Mateo. A study target area was defined as 1990 census block groups with median household income below the 10th percentile for each county. All street blocks in this target area were numbered. A simple random sample of street blocks was selected to conduct recruitment.

All women in the randomly sampled blocks who met the eligibility criteria were invited to participate. The enrollment and participation goals were 500 women per county, 2,500 women overall, greater than 80% household rate, and greater than 70% participation rate. For logistical planning, blocks were selected in several stages of simple random samples.

Household enumeration

Working in pairs, community health outreach workers created a map and systematically enumerated all dwellings in each sampled block. Workers used an enumeration form for each dwelling to record and monitor household contact attempts, successes, resident eligibility, enrollment, and refusals. Workers made at least 3 attempts to contact a resident of each dwelling.

Enrollment

Study eligibility was established by face-to-face interview. Eligible women were invited to participate and could enroll immediately or at a prearranged date. The option of completing the survey at a neutral location was offered, as was a $50 stipend for participation.

In the final 2 months of the study, workers focused on increasing the contact and participation rates for all sampled blocks. In this phase, some women who initially refused to participate because of an expressed fear of needles decided to participate when given the option of the oral fluid HIV antibody test. In addition, the remuneration was increased to $75 during this period, prompting some women to enroll who had previously refused.

Measures

The primary objective was to measure the prevalence of HIV among this population of young women. The prevalence of other sexually transmitted diseases, markers of hepatitis, and risky sexual and drug use behavior were also measured.

After obtaining informed consent, survey workers conducted 45-minute face-to-face structured interviews in a confidential setting. They recorded demographic characteristics, medical history, drug use, sexual behavior, and knowledge, attitudes, and beliefs around HIV transmission and prevention. The questionnaire was administered in either English or Spanish.

After the interview, a client-centered counseling session to assess risk of HIV and sexually transmitted disease was conducted. A blood specimen was drawn for HIV and syphilis in all 5 counties; for antibodies to hepatitis C and herpes simplex virus (HSV), types 1 and 2, in 4 counties; and for antibodies to hepatitis A and B virus in 3 counties. A urine specimen was collected for gonorrhea and chlamydia testing in 3 counties. The names of study participants were submitted with laboratory request forms for all tests except HIV, for which only a coded number linkable to the survey was submitted to preserve confidentiality.

Summary points

- Women of color, especially those living in economically depressed areas, are disproportionately affected by HIV
- Population-based surveys provide 1 of the best means for assessing the prevalence of HIV and the potential for expansion of the epidemic
- To estimate the prevalence of HIV, sexually transmitted diseases that are markers for HIV risk, and specific risk behaviors, 2,545 lower-income women aged 18 to 29 years were recruited from randomly selected street blocks within 5 California counties
- Weighted estimates are presented for prevalence of sexual and drug use behaviors and for 8 sexually transmitted infectious diseases

Laboratory methods

The presence of HIV antibodies was demonstrated by enzyme immunoassay (EIA; Organon Technika Corporation, Durham, NC; or the Abbott HIVAb HIV-1 EIA, Chicago, IL), and positive results were confirmed by immunofluorescent antibody (IFA; Waldheim Pharmazeutika GmbH, Vienna, Austria) and resolved, in the event of any discrepancy, by Western blot (Cambridge Biotech Corporation, Rockville, MD). Late in the study, some oral fluid specimens were tested for HIV antibody (Orasure; Organon Teknika). Syphilis was detected by nontreponemal antibody tests (rapid plasma reagin or VDRL) and confirmed by treponemal antibody test (microhemagglutination assay for *Treponema pallidum* [MHA-TP]). Hepatitis A antibody was detected by the microparticle EIA (Abbott HAVAb; Abbott Laboratories, Abbott Park, IL). Hepatitis B core antibody was detected by a commercial EIA (Abbott Corzyme; Abbott Laboratories) and, if assay results were positive, for the presence of hepatitis B surface antigen by a monoclonal antibody EIA (Abbott Auszyme; Abbott Laboratories). Antibodies to hepatitis C virus (HCV) were detected by a commercial antigen EIA (Hepatitis C Encoded Antigen; recombinant c22-3, c200, NS5i, Ortho HCV EIA, Ortho Diagnostic Systems, Raritan, NJ). Specimens that tested positive were retested using the recombinant immunoblot assay (Chiron, Emeryville, CA; or Ortho Diagnostic Systems). Ligase chain reaction (LCX; Abbott Laboratories) was used to detect gonococcal and chlamydial DNA in urine specimens. A strip recombinant immunoblot assay (RIBA, HSV 1 and

2; Chiron) was used to differentiate HSV-1 and HSV-2 specific antibodies on recombinant antigen bands for glycoproteins gG1, gB1, gG2, and gD2.[14]

Counseling and referral services

Risk assessment counseling was conducted after the study interview and before specimens were collected. Participants were counseled on the disclosure of test results 2 weeks later at a venue designated by the study team, often the department of public health or a local community-based organization. The sexually transmitted disease control units of the local departments of public health provided treatment, follow-up, and partner notification for syphilis, chlamydia, and gonorrhea. Referrals for HIV care and services were also made at disclosure counseling. Referrals for hepatitis, other health services, and social needs were made during counseling sessions for risk assessment counseling, disclosure, or other follow-up visits.

Statistical analyses

Point prevalence and 95% confidence intervals (CIs) were calculated to account for the 1-stage, cluster sample design. Probability weights were constructed using the relative probability of being included in the sample and were based on the sizes of the target populations by county as estimated in the 1990 census. Probability weights adjust estimates to reflect the entire 5-county target population. Cluster weights reflect the level of homogeneity within primary sample units (street blocks) and affect the precision of estimates. Higher homogeneity within blocks (that is, greater similarity between women residing in the same block with respect to the measure) results in wider 95% CIs. Crude and weighted estimates for demographic characteristics, disease prevalence, and risk behavior are presented. Crude analysis was conducted using a commercially available statistical software (SAS-PC version 6.11; Statistical Analysis System for Personal Computers, Cary,

Table 1 *Demographic characteristics of participants (n = 2,543)*

Characteristic	Crude prevalence No. (%)	Crude prevalence 95% CI	Weighted prevalence %	Weighted prevalence 95% CI
Total*	**2,543 (100.0)**	–		
Race or ethnicity				
Latina	955 (37.6)	35.7-39.5	34.1	29.1-39.1
African American	851 (33.5)	31.6-35.3	38.7	31.8-45.5
White	414 (16.3)	14.9-17.8	15.1	12.1-18.1
Asian	95 (3.7)	3.0-4.6	3.4	2.3-4.3
Pacific Islander	51 (2.0)	1.5-2.6	2.3	1.3-3.3
Native American	12 (0.5)	0.3-0.8	0.4	0.3-0.7
Caribbean/West Indian	3 (0.1)	0-0.4	0.2	<0.1-0.3
Mixed	98 (3.9)	3.2-4.7	3.5	2.6-4.3
Other or missing	64 (2.5)	2.0-3.2	2.4	1.6-3.2
Country of birth				
United States	1,718 (67.6)	65.7-69.4	69.6	64.6-74.5
Mexico	552 (21.7)	20.1-23.4	19.2	15.4-23.1
Other	272 (10.7)	9.5-12.0	11.2	8.9-13.5
Education				
Less than high school	1,112 (43.7)	41.8-45.7	41.6	37.8-45.3
More than high school	751 (29.5)	27.8-31.4	30.7	27.5-34.0
High school graduate	673 (26.5)	24.8-28.2	27.7	24.6-30.8
Income last month, $				
<$1,000	1,462 (57.5)	55.5-59.4	57.1	53.3-60.9
$1,000 to $4,999	920 (36.2)	34.3-38.1	36.7	33.2-40.3
≥$5,000	39 (1.5)	1.1-2.1	1.9	1.2-2.5
Unknown, refused, or missing	122 (4.8)	4.0-5.7	4.3	3.4-5.2
Marital status				
Single/never married	1,436 (56.5)	54.5-58.4	59.5	55.8-63.3
Married	605 (23.8)	22.2-25.5	21.6	8.9-24.3
Members of unmarried couple	260 (10.2)	9.1-11.5	9.6	7.9-11.3
Separated	138 (5.4)	4.6-6.4	5.4	4.4-6.5
Divorced	78 (3.1)	2.4-3.8	2.9	2.2-3.7
Widowed	7 (0.3)	0.1-0.6	0.2	0.1-0.4
Other, refused, or missing	19 (0.8)	0.5-1.2	0.6	0.3-1.0
Median age, yr	23.9			

CI = confidence interval.
*Totals do not always add up to 2,543 because of missing data.

Table 2 *Prevalence of markers for infectious diseases among participants in the Young Women's Survey*

Disease, disease marker	No. screened* No.	Crude prevalence (%)	95% CI	Weighted prevalence %	95% CI
HIV	2,543	7 (0.3)	0.1-0.6	0.3	0.1-0.4
Syphilis	2,424	16 (0.7)	0.4-1.1	0.7	0.3-1.1
Gonorrhea	1,336	10 (0.8)	0.4-1.4	0.8	0.3-1.3
Chlamydia	1,370	42 (3.1)	2.2-4.2	3.3	2.4-4.8
Hepatitis A antibody	1,247	425 (34.1)	31.4-36.7	33.5	28.3-38.7
Hepatitis B core antibody	1,337	117 (8.8)	7.3-10.4	8.7	7.1-10.4
Hepatitis B surface antigen	1,337	9 (0.7)	0.4-1.1	0.8	0.3-1.2
Hepatitis C antibody	1,709	40 (2.3)	1.7-3.2	2.5	1.4-3.6
Herpes simplex type 1	1,663	1,256 (75.5)	73.4-77.6	73.7	71.6-76.9
Herpes simplex type 2	1,663	544 (32.7)	30.5-35.0	34.4	29.9-39.0

HIV = human immunodeficiency virus; CI = confidence interval.
*Specimens were screened for HIV and syphilis in all 5 counties; 4 counties screened for hepatitis C and herpes simplex virus types 1 and 2; and 3 counties screened for gonorrhea, chlamydia, hepatitis A, and hepatitis B. The total number screened does not always equal the total number of women enrolled because of refusal to provide specimens or insufficient quantity of specimen remaining.

NC). Another software package (Stata version 6.0; StataCorp, 1997, College Station, TX) was used for the weighted analysis.

RESULTS

Between April 4, 1996, and January 6, 1998, we enumerated 24,223 inhabited dwellings within 448 randomly selected blocks in the 5-county target area. Contact was made with a resident of 19,546 (80.7%) dwellings. Within these dwellings, 3,560 eligible women were identified, and 2,545 (71.5%) agreed to participate. The most common reasons offered for not wishing to participate were not interested (65.6%), had tested recently (9.4%), did not have time (8.4%), and preferred own health care provider to do the testing (6.3%).

Table 1 presents crude and weighted demographic characteristics of participants. African American women represented the largest ethnic group (38.7%), and most women (69.6%) were born in the United States. Less than a third of the women (27.7%) were high school graduates, and the median household income was less than $1,000 per month.

The prevalence of markers for 8 diseases is presented in table 2. Notably, genital herpes was the most common sexually transmitted disease in women from all counties tested. Reported sexual behaviors relevant to HIV and sexually transmitted diseases are presented in table 3; reported drug use in the preceding 6 months is outlined in table 4.

DISCUSSION

The population-based YWS successfully achieved a targeted sample size of more than 2,500, a household contact rate of more than 80%, and a participation rate of more than 70%. The YWS measured the point prevalence of markers for 8 infectious diseases and related sexual and drug use behavior. For most measures, the weighted and crude estimates did not suffer greatly by point estimate or confidence interval. This is likely due to a high degree of heterogeneity within sampled clusters (street blocks) and the large number of clusters sampled (n = 448). Without great loss in precision, the study and sampling design afforded efficiency in the field by concentrating promotion, enumeration, and recruitment efforts on a limited number of blocks. Many young minority and low-income women at high risk for HIV and sexually transmitted diseases enrolled in the study, received client-centered HIV counseling and testing and health education, and were screened and treated for sexually transmitted diseases.

The overall prevalence of HIV infection (0.3%) is high considering the young age of participants (<30 years) and estimates from other studies. Participants have a greater than 4-fold higher prevalence of HIV than is estimated for California women overall (0.06%).[15] HIV seroprevalence

Table 3 *Prevalence of sexual behavior among sexually active participants only (n = 2,439)*

Characteristic	Weighted prevalence %	95% CI
Ever had sex (n = 2,439*)		
Oral	52.7	49.3-56.1
Vaginal	99.9	99.7-100.0
Anal	21.7	19.5-24.0
Used a condom last time having vaginal sex		
With steady partner (n = 2,012)	29.9	26.6-33.2
With casual partner (n = 317)	51.4	43.8-58.9
With new partner (n = 219)	44.0	33.9-54.1
Used a condom last time having anal sex		
With steady partner (n = 226)	14.1	8.9-19.9
With casual partner (n = 68)	28.8	15.5-42.1
With new partner (n = 58)	26.9	13.8-40.0
Ever had sex with		
A person who injects nonprescription drugs	10.4	8.5-12.3
A man who has sex with other men	5.4	3.8-7.0
A person with AIDS or known to be HIV-positive	1.4	0.9-1.8
Ever received money or drugs for sex	10.8	7.9-13.8

CI = confidence interval; AIDS = acquired immunodeficiency syndrome; HIV = human immunodeficiency virus.
*Denominators other than 2,439 are shown when applicable.

Table 4 *Prevalence of drug use (n = 2,543)*

Drug	Ever used weighted %	Ever used 95% CI	In last 6 months: Used drug weighted %	Used drug 95% CI	"High" during sex weighted %	"High" during sex 95% CI
Alcohol	78.0	75.2-80.8	58.3	55.4-61.1	28.3	25.6-31.1
Marijuana	53.3	49.0-57.4	34.5	30.7-38.2	20.6	17.9-23.3
Cocaine	16.4	13.1-19.5	7.4	5.1-9.7	4.6	2.5-6.6
Speed	12.6	10.1-15.0	4.9	3.7-6.2	2.7	2.0-3.5
LSD	11.7	8.4-13.8	2.7	1.7-3.6	1.0	0.5-1.4
Heroin	4.4	3.0-5.7	1.8	1.1-2.3	1.2	0.6-1.8
PCP	1.8	1.3-2.4	0.3	0.1-0.6	0.2	<0.1-0.4
Prescribed methadone	1.0	0.6-1.5	0.6	0.2-0.9	0.3	0.1-0.5
Nonprescribed methadone	0.3	<0.1-0.5	0.2	0-0.3	<0.1	<0.1-0.1
Other drugs	3.7	2.4-4.9	1.7	1.1-2.4	0.4	0.2-0.7
Any injected drug	3.4	2.3-4.5	1.8	1.0-2.7	1.4	0.7-2.1

CI = confidence interval; PCP = phencyclidine.

in the survey was 2.5-fold higher than that among women delivering infants in 1995 (the last year of the Survey of Childbearing Women)[16] (0.1%) and 25-fold higher than that among female civilian applicants for the US military (0.01%).[17] HIV seroprevalence estimated in this study is similar to that for female US Job Corps entrants (0.3%) from 1990 through 1996[18] and to a population-based survey conducted in similar neighborhoods in San Francisco in 1989 (0.4%).[19]

Prevalences of other sexually transmitted diseases point to the potential for future expansion of HIV transmission among women in the target population. Studies have found HSV-2 seropositivity correlated with markers of high-risk sexual behavior, such as lifetime number of partners, years of sexual activity, and history of other sexually transmitted diseases.[4,6,7,13,20] The high prevalence of HSV 2 in the YWS population is of particular concern in light of the possibly strong association between genital herpes and the transmission of HIV.[21,22]

Other sexually transmitted diseases are also thought to be causally associated with HIV transmission.[23] Other sexually transmitted diseases detected in the YWS, including syphilis, gonorrhea, and chlamydia, may have otherwise gone undiagnosed, indicating a need for better screening measures for these diseases.

Risk behavior reported points to the potential for further expansion of the HIV/AIDS epidemic among low-income women. The rate of condom use is low, injection drug use remains a significant risk, and many women know little about the risk behavior of their sexual partners.

Interpretations of the results of this study are subject to limitations. The most serious threat to validity is whether women declining to participate were more or less likely to be HIV-positive. The possible nonparticipation bias is exacerbated by the 19.3% no-contact rate (of dwellings) and the 28.5% refusal-to-participate rate. The direction of this possible bias is unknown. Nonetheless, the consistency of our estimates with studies in similar populations[16,18,19,24] points to the plausibility of our findings.

No data are available for making comparisons between women enrolled in the YWS survey and eligible women who refused participation. The reasons basic demographics for refusers, as well as reasons for refusal, were not recorded are 2-fold: procedures required to obtain informed consent were not feasible, and data related to age and race or ethnicity based on refusers' appearance could not be collected with any acceptable level of accuracy.

Other possible limitations include the inability to collect or insufficient quantity of some specimens to conduct all tests and reliance on self-reported information for sensitive questions on risk behavior. To minimize the potential for underestimation from face-to-face interview, survey workers were female, came from similar backgrounds as participants, and spent time developing rapport and gaining trust within the community and among eligible young women in particular.

Despite these limitations, the YWS found evidence of continuing risk for transmitting HIV and sexually transmitted diseases in the target population. Data point to geographic areas and populations in which these infections are likely to be most prevalent and risk behavior to target for primary prevention interventions. Population-based data such as the YWS have an important place in the spectrum of epidemiologic tools to monitor the HIV/AIDS epidemic and enhance and validate other methods including AIDS or HIV reporting and sentinel HIV surveillance.

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COMMENTARY

Poor young women need information and empowerment

Sexually transmitted diseases are exacting a disproportionately heavy toll among impoverished young women, especially women of color. The presence of sexually transmitted diseases in a population is a harbinger for further morbidity, such as infertility and HIV infection. AIDS is now the third leading cause of death in women aged 25 to 44 in the United States.[1] It is the leading cause of death in African American women in this age group. The study by Ruiz et al confirms the higher prevalence of sexually transmitted disease and HIV among women with low incomes, predominantly from ethnic minorities, in northern California. The authors report a disturbing rate of HSV-2 infection and a prevalence of HIV infection that is 4 times the estimate for women in the state.

It is important for primary care providers to understand how these statistics apply at the community level and in individual practices. Well-designed population-based surveys can provide the most accurate data about disease prevalence. They also reveal the associated risk behaviors that can identify targets for primary prevention measures. The report by Ruiz and colleagues advances our knowledge of the actual prevalence of sexually transmitted diseases and HIV infection, as well as ongoing behaviors likely to transmit these infections. Perhaps most concerning, it shows that these women have an alarming rate of drug misuse and unprotected sexual contact with men at high risk of HIV and sexually transmitted diseases.

Why are these women exposed to such risks? This study does not directly address this question, but much is known from other studies.[2-4] Women frequently have difficulty negotiating the use of condoms with their partners. Many women experience anger and violence from their partners when they suggest condom use. Women who are financially dependent on their partners may feel

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powerless to insist on condom use. When sex is exchanged for drugs or money, condoms may not be part of the bargain. Finally, judgment may be impaired under the influence of drugs or alcohol. A high percentage of women in this study reported being intoxicated during sex.

What does this mean for primary care physicians? The epidemic of sexually transmitted diseases and HIV infection in women is, first and foremost, a social problem—poverty, violence, substance misuse, ignorance, and relative powerlessness are often at the root of transmission. There are no simple solutions for complex social problems, but primary care physicians must address the challenge. One simple step involves taking a more detailed sexual history for all patients. In the AIDS era, most clinicians have become more comfortable with asking open-ended, nonjudgmental questions about sexuality—for example, "Do you have sex with men, women, or both?"—and condom use. But we should go further.

For women who do not use condoms, we should ask about the power balance in their intimate relationships and their sense of personal safety. We should routinely try to identify if their partners have risk factors for HIV or sexually transmitted diseases. We may ask them about the use of drugs and alcohol in relation to sexual activity. Finally, we must ask about the trading of sex for money or drugs.

The prevention of the transmission of HIV and other sexually transmitted diseases is more challenging than treating the diseases. It is difficult for physicians in busy practices to spend time obtaining the necessary information from patients at risk for these diseases. Creativity and a multidisciplinary team effort are needed. When patients at risk are identified, we must offer appropriate counseling in risk reduction, cervical screening, screening for HIV and other sexually transmitted diseases, and referral for social and psychological services and drug treatment, when indicated. The ultimate goal in the battle against the growing crisis of HIV infection and other sexually transmitted diseases among poor young women, and the responsibility of primary care physicians, is to inform and empower women at risk so they can better protect themselves and their families.

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Family reports of pain in dying hospitalized patients: a structured telephone survey

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ABSTRACT **Objectives** To see how often families in Oregon reported moderate to severe pain in dying patients in late 1998 compared with late 1997. **Design** A systematic random sample of death certificates was used to identify family members of decedents who died in a hospital setting between October 1 and December 31, 1998. A structured telephone interview was used to obtain data. **Participants** Family members of 103 decedents (who died in hospitals 2 to 4 months before data collection) were identified with the use of death certificates. **Results** In late 1998, 56 family members (54%) reported that their loved one experienced moderate to severe pain in the last week of life. **Conclusions** Family reports of moderate to severe pain in dying hospitalized Oregonians remain high. The influence of environmental factors on pain management may have implications for practice and policy nationwide.

The undertreatment of pain in the dying has been documented[1,2] and is a national concern.[3] Despite the widespread availability and adoption of pain management guidelines,[4,5] numerous investigations have shown that pain remains a significant problem in end-of-life care.[2,6] For example, the SUPPORT investigators reported that half of family members of patients who were conscious before death said the decedent had moderate to severe pain most or all of the time.[1] Inadequacies in pain management have been part of the impetus for the current national wave of efforts to improve care of the dying, with funding support by numerous foundations and federal agencies and educational programs designed by professional organizations such as the American Medical Association and the American Nurses Association.

In a previous interview study with 475 recently bereaved family members, we asked family respondents to rate their loved one's level of pain in the last week of life

Summary points

- In late 1998, 54% of family members reported that their hospitalized loved one experienced moderate to severe pain in the last week of life
- Environmental factors unique to Oregon, including increased family expectations for pain management and physician concerns about investigation, may help explain reports of pain
- Exploring the effects of environmental factors on pain management may have implications for practice and policy nationwide

on a 4-point single-item indicator (none, mild, moderate, and severe).[7] Comparisons by location of death showed that rates of moderate to severe pain were higher for hospital deaths. On closer inspection, however, differences between locations in reports of moderate to severe pain for the first 11 months of the study were not significant. The observed difference by location was due to increased family reports of moderate to severe pain for hospital deaths only during the last 3 months of 1997, which increased from 33% to 57%.[7,8]

We wondered whether the increased number of reports of moderate to severe pain in dying hospitalized patients noted in late 1997 had returned to baseline rates by late 1998. To address this question, we collected family data about hospitalized decedents who died during the final 3 months of 1998. We were specifically interested in family reports of pain in dying hospitalized decedents and did not anticipate that any other variables would change significantly.

METHODS

Methods were identical to those used in the initial 1996-1997 study but modified to exclude deaths in private homes and nursing homes.[7] The design of the study of human subjects was approved by the University Institutional Review Board and the Oregon Health Division.

In collaboration with the Oregon Health Division, we conducted a systematic random sampling of Oregon death certificates for deaths occurring in hospitals in the last 3 months of 1998 (n = 401). Because Oregon death certificates list the name of an informant (usually a family member) but no address or telephone number, we had to search publicly available records (for example, state telephone directories, newspaper obituaries) to locate family contacts. This proved to be both time-consuming and difficult. People with common last names or unlisted telephones were especially difficult to locate. Using these methods, we located 51% (n = 203) of family contacts. "Family" was defined broadly to include partners, friends, and other people closely involved with the decedents' death because not all those listed as an "informant" on the death certificate were legally family.

In an initial telephone call, the study was explained, and if the family contact agreed, a telephone interview appointment was scheduled for the following week. Despite the challenges of making cold telephone calls, 51% (n = 103) of the family contacts located agreed to participate and were qualified to be included in this sample, thus yielding an overall response rate of 26% of the original sample. These rates of successful case-finding and interview completion are virtually identical to those in the 1996-1997 study.[7] The potential respondent was then sent a packet of information containing a letter of introduction, a study explanation sheet, and a postcard to return if they subsequently decided to decline participation. To be included in the sample, the family contact had to indicate that they were involved in the patient's care and decision making in the final month of life. Individuals who were not involved in the patient's care and decision making were excluded from the sample.

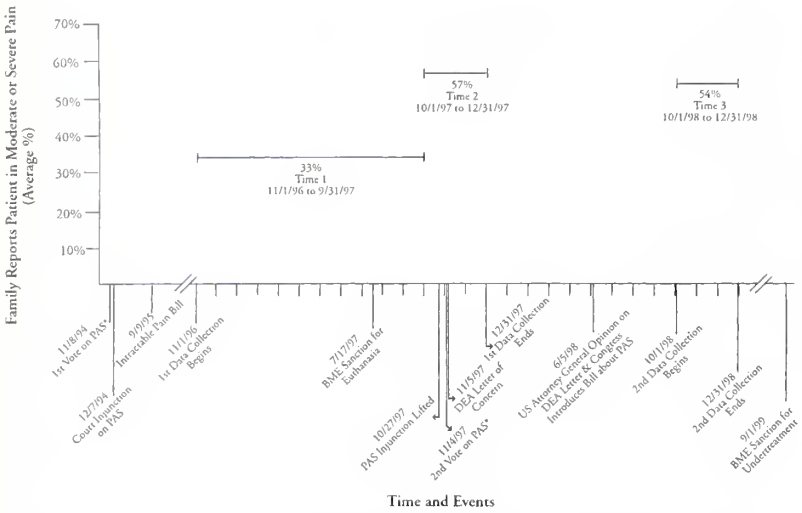
Family contacts were interviewed by telephone 2 to 4 months after the death of their family member with the 58-item Barriers Questionnaire, which was developed by the investigators and used in the 1996-1997 survey.[7] This time frame was selected to minimize respondent burden and recall error.[9] The questionnaire contained the following question regarding the patient's level of pain: "Which best describes the level of comfort of [insert name] in the week before his/her death? Would you say that he/she was: comfortable, in mild pain or distress, in moderate pain or distress, or in severe pain or distress?" Additional questions were asked regarding pain management (table). As in the previous study, graduate research assistants were intensively trained to standardize survey administration, and inter-rater reliability was high (94%).

Study data consisted of information about the decedents from death certificates and from family contacts. Data from death certificates included decedent age, death information (date, place, and cause of death), and an informant's name. The cause of death was classified using the diagnostic categories of the *International Classification of Diseases, 9th Revision,*[10] for the 15 leading causes of death.

Table *Decedent characteristics and family reports (n = 103) about pain in dying hospitalized patients from October through December 1998*

Variable	Dying patients No. (%)
Decedent age, yr, Mean ± SD (range)	74.3 ± 12.6 (40-102)
Race, white	100 (97)
Sex, male	61 (59)
Family reports patient in moderate or severe pain*	55 (54)
Family reports staff unaware of patient suffering	21 (20)
Family reports staff reluctant to medicate	12 (12)
Family reports attention to comfort needs were good or excellent*	92 (89)

*Based on 102 reports because 1 respondent declined to respond to this item.



Family reports of pain in dying hospitalized patients and concurrent events. Intractable Pain Bill refers to ORS 677.485. PAS = physician-assisted suicide; BME = Oregon Board of Medical Examiners; DEA = Drug Enforcement Administration

RESULTS

In this sample, all the family contacts were related to the decedent by blood or marriage. The relationships to decedents were as follows: wife (n = 37 [36%]), daughter or stepdaughter (n = 20 [19%]), husband (n = 14 [14%]), son or stepson (n = 13 [13%]), daughter-in-law (n = 8 [8%]), and other (for example, sister or mother) (n = 11 [11%]). The top 3 causes of decedents' deaths were cancer (17%), heart disease (16%), and cerebrovascular disease (16%), similar to those in national data. Data about other decedent characteristics and family reports about pain management are presented in the table. Fifty-six family members (54%) reported that their loved one experienced moderate to severe pain in the last week of life. Despite these reports of pain, 92 (89%) described attention to comfort needs as good or excellent.

DISCUSSION

For in-hospital deaths in early 1997, 33% of family members reported that their loved one had moderate to severe pain in the last week of life. In late 1997, the rate was 57%.[7] One year after our first survey, the rate was 54%. Over the 26-month period in which the original and follow-up studies took place, the percentage of in-hospital deaths in Oregon remained stable at approximately 31%.[11] The Oregon political climate has been volatile during the past 4 years (figure). Although our study is not robust enough to say that the number of patients dying in pain in hospitals is increasing, we are concerned about this aspect of patient care and the possible effect of political decisions on the levels of pain relief given to patients.

Oregon is the only state in the country whose voters have twice voted to approve an initiative legalizing physician-assisted suicide. The initiative was first passed in 1994 but was put on hold by a court injunction. In the months before the second vote in November 1997, extensive media coverage of the debates about physician-assisted suicide also included related topics such as advance directives, pain management, and hospice care, which educated the public about end-of-life care. The court injunction was quietly lifted in late October 1997, days before voters reaffirmed the initiative a second time.

Following the 1994 affirmative vote on physician-assisted suicide, early data suggested that end-of-life care in Oregon was fairly progressive.[12-15] For example, advance planning for those with serious or life-threatening illness was and still is common.[13,16] With the development of comfort-care teams and rising rates of hospice referral,[12,13] pain and symptom management also appeared to be improving. In Oregon, the prescription amounts of morphine for all uses was higher in 1998 than it had been in 1997, and Oregon continues to be a leader in the use of morphine per 100,000 population,[17] despite family reports of moderate to severe pain for a substantial percentage of dying hospitalized patients.

There may be several reasons that hospitalized patients are still dying in pain. It is possible that the media coverage of late 1997 led families to become more sensitive to the undertreatment of pain and thus to report higher levels of pain when pain was, in reality, no worse. If true, however, the effect did not generalize to families of patients dying in other settings. It may be that hospitals are currently doing more than other settings to heighten family awareness of pain management issues. For example, some Oregon hospitals have posted signs encouraging patients to tell physicians and nurses about their pain, and other hospitals have made pain the fifth vital sign. However, an increase in family expectations about pain management is likely to be only one factor contributing to family reports of increased pain in this subgroup of patients.

Another contributing factor may be that physicians and nurses perceive that they are subject to greater scrutiny from their peers in acute care hospital settings, leaving them more susceptible to pressures that could affect their practice. Other investigators have raised concerns regarding the adverse effects of scrutiny and threats of investigation on physician prescribing of controlled substances.[18-20] The Institute of Medicine recently reported threats of investigation and legal barriers to prescribing controlled substances as among the reasons physicians undertreat pain.[3]

Given our difficulty in reaching many family members in our sample, sampling biases may affect the generalizability of our findings. However, unless Oregon death certificates contain informant contact information in the future, it is hard to imagine obtaining a better response rate on a random sample of Oregon death certificates. We did not directly measure patient pain, and several studies

suggest that family caregivers have inaccurate perceptions of patient pain.[21] We also did not define pain or distress, and respondents may have interpreted these words differently.

Although it is difficult to collect data that will provide proof of connections between complex historical events and patient care (figure), we must not pretend that patient care happens in a vacuum. End-of-life care in Oregon is subject to a variety of complex, volatile political and regulatory forces that are both local and national, and so many families reporting that their loved one experienced moderate to severe pain in the last week of life is worrisome. Since data collection, further changes have taken place. Exploring the effects of environmental factors on pain management may have implications for practice and policy nationwide.

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COMMENTARY

Measuring quality of care at the end of life: who? when? where? and how?

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"How people die remains in the memories of those who live on."[1] This statement explains a basic tenet of palliative medicine: the family is the unit of care. Unfortunately, the medical literature seems to grow exponentially with evidence of inadequate medical care at the end of life. Too often, medical prognosis and goals of care are not discussed, symptoms such as pain are underassessed and undertreated, and psychosocial or spiritual issues are ignored. As well as resulting in patient suffering, the memories of those who live on may be of intense suffering by their loved ones. In response, measuring quality of care has become a priority in end-of-life research. Identifying the best method, however—that is, who, when, where, and how—remains a tremendous and unresolved challenge.[2]

Uncontrolled pain is associated with depression, anxiety, functional loss, economic hardship, suffering, and stress for the caregiver. Unsurprisingly, research into palliative care universally includes pain control as one of many possible items to measure quality of care at the end of life. Through retrospective assessment by family mem-

bers, Tolle and associates assess pain control in hospitalized patients at the end of life. The advantage of this method is to reduce research time and cost. Also, it ensures a completed pain assessment because some patients are cognitively impaired during the last week of life.

Unfortunately, studies by Higginson and colleagues and Hinton suggest that retrospective pain assessments by proxies may not be valid.[3,4] In fact, proxies consistently report more severe pain than the patient does. Because only 26% of eligible family members agreed to participate in this study, the results may not be representative of the larger population. This low participation rate is puzzling, given the reported acceptance and emphasis of end-of-life care in Oregon. In a North Carolina study with similar methods, interviews were completed with 66% of eligible family members.[5]

Results of the Tolle study include a 54% rate of moderate to severe pain in hospitalized patients during the last week of life. These results are similar to those of the SUPPORT trial in which about 50% of conscious patients had moderate to severe pain at least 50% of the time before death.[6] Interestingly, 90% of families in the Tolle study also reported that attention to comfort needs was good or excellent. These results are similar to those of the study of Hanson et al in which almost 70% of family comments on hospital end-of-life care were positive.[5] The SUPPORT trial did not appear to have an equivalent question.

Thus, we are left with an obvious discrepancy in the present study. Although pain control appeared inadequate, family satisfaction with attention to comfort was high. Is this adequate quality of care? Given the inherent limitations of the methods, this study may better assess family perception than actual quality of care as experienced by the patient.

Although an understanding of its limitations is important, this research must be acknowledged for its value. First, family perceptions of quality of care are important independent of patient experience. Second, hypotheses are generated that can be subsequently evaluated with more methodologically stringent research. This may include direct assessment of patient pain and other quality-of-care indicators obtained prospectively in the last week of life. Studies have shown that as many as 50% of patients are awake in the last week of life and may, therefore, be able to give a history.[7] Such research would require a large amount of time, effort, and most important, funding. With a common destiny, can we afford less?

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Netphiles

http:// www.oncolink.upenn.edu/ is a comprehensive information site for people with cancer. There are few, if any, issues faced by such patients that are not addressed in some way by this site or its links. Produced by University of Pennsylvania, it has excellent sign-posting that is easy to use. The range of issues covered is impressive, and includes the National Cancer Institute Physician's Guidelines, sexuality, and even how to pronounce different chemotherapeutic drugs. The art section shows uplifting images, called "Confronting Cancer Through Art." All information published is attributed to an author, whose affiliation is stated, resulting in a transparency and reliability lacking in many consumer health sites. The depth of information makes the site useful for the most uninformed member of the public right through to oncologists. The global resources, book reviews and financial issues sections deserve special attention. Among thousands of cancer-related sites, this one must come at the top of any list for the physician or patient.

Helen Morant, medical student

We welcome suggestions for Web sites to be included in future Netphiles

Use of preventive health behaviors by lesbian, bisexual, and heterosexual women: questionnaire survey

ABSTRACT **Objectives** To determine whether lesbians and bisexual women are less likely than heterosexual women to use preventive health measures. **Design** Written, anonymous, self-administered questionnaire. **Setting** 33 physicians' offices and community clinics mainly in urban areas of 13 states. **Participants** 524 lesbians, 143 bisexual women, and 637 heterosexual women. **Results** Bisexual women were less likely than heterosexual women to have had appropriate cholesterol screening (odds ratio 0.29, 95% confidence interval 0.11 to 0.73) or appropriate mammography (0.33, 0.13 to 0.84). Human immunodeficiency virus testing was more common in lesbians (2.38, 1.51 to 3.74) and bisexual women (1.99, 1.17 to 3.38) than in heterosexual women. Illicit drug use was higher in lesbians (2.04, 1.14 to 3.70) and bisexual women (1.96, 1.07 to 3.57) than in heterosexual women. Lesbians were more likely than heterosexual women to practice safer sex (2.60, 1.23 to 5.49) and less likely to have ever been infected with human papillomavirus (0.48, 0.25 to 0.89). **Conclusion** There were important differences in the preventive health measures taken by lesbians and bisexual women and those taken by heterosexual women. All patients should receive standard health tests, such as cholesterol screening and mammography, regardless of their sexual orientation. Lesbians and bisexual women who report illicit drug use should receive counseling, as appropriate.

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Although advances in medical and surgical care have contributed to declines in death and disease for most of the American population, 70% of all illness is caused by preventable factors.[1,2] The results of several studies performed without control groups have suggested that lesbians have poorer health than the general population.[3-12] Furthermore, there are no data that compare the use of preventive healthcare services by lesbians, bisexual women, and heterosexual women.

Surveys of lesbians that did not have heterosexual control groups have raised the possibility that morbidity is greater among lesbians than among heterosexual women: lesbians have a higher rate of nulliparity and late parity[3,4] (increasing their risks of breast, endometrial, and ovarian cancer) and a higher mean body mass index[13] (possibly increasing their risks of breast and endometrial cancer, heart disease, hypertension, and diabetes). In studies that did not use probability samples or heterosexual control groups, lesbians and bisexual women have also had higher rates of cigarette smoking,[3-5] alcohol consumption,[5,6] illicit drug use,[3-7] and unsafe sex[8-11] than heterosexual women.

Added to these risk factors is the possibility that lesbians and bisexual women use the healthcare system less often than heterosexual women and then only after they have had more severe symptoms.[3,14,15] This may be because they have lower incomes and lower rates of health insurance,[3,4] or they may have fewer encounters with the healthcare system because they are less likely to need contraception or prenatal care.[3,12]

Additionally, lesbians and bisexual women may avoid the healthcare system because they fear or have experienced discrimination because of their sexual orientation.[14] Homophobic attitudes and discrimination against lesbians have been documented in a range of healthcare personnel, including physicians, medical students, and nurses.[16-19] People who have experienced discrimination may be discouraged from seeking health care.[15] Lesbians may also use complementary healthcare providers if they are seeking more holistic and less discriminatory care.[4,15,20]

These factors may adversely affect the health of lesbians and bisexual women. Previous surveys have used convenience samples from outside the healthcare setting without comparison groups of heterosexuals. The Institute of

Summary points

- Lesbians and bisexual women may be less likely to use preventive health measures than heterosexual women
- Previous studies have found that lesbians and bisexual women are more likely than heterosexual women to smoke, use illicit drugs, and have unsafe sex
- A questionnaire survey of about 1,300 women found that bisexual women were about one third as likely as heterosexual women to have had appropriate screening for cholesterol or a mammogram and that lesbians and bisexual women were about twice as likely as heterosexual women to use illicit drugs
- Clinicians should ensure that they provide appropriate advice about safer sex and screening for sexually transmitted infections according to their patients' sexual behavior, not just their sexual orientation

Medicine at the National Academy of Science found that more data are needed to determine if lesbians are at higher risk of developing some health problems.[21] To explore the use of preventive health measures among lesbians already using the healthcare system, data were collected on lesbian, bisexual, and heterosexual adult women who used outpatient services and analyzed according to the sexual orientation of the patient.

METHODS

Questionnaire

A written survey was developed by a panel of two obstetrician-gynecologists, an internist, an epidemiologist, and a biostatistician. The survey was refined after two pilot tests. It contained 98 questions about the patient's access to health care, use of screening tests, general health, substance use, sexual behavior, and demographic information, such as race and income. The questionnaire did not state that sexual orientation was an issue of interest. Sexual orientation was assessed solely by the patient's self-identification. Patients were asked: "How do you define your sexual orientation?" They could then choose from the close-ended answers: heterosexual/straight, bisexual, lesbian/gay/homosexual, or unsure. The study protocol was approved by the Institutional Review Board of the California Pacific Medical Center in San Francisco.

Survey sites

To include a broad spectrum of women, a variety of practice settings was sought. Private offices and community clinics were contacted in an attempt to achieve geographic distribution across the nation. The participation of sites was sought through letters sent to clinicians known personally to the author, by publicizing the study in newsletters and at the conferences of two national lesbian and gay health organizations, and by the "snowball" technique, in which new participants are recruited through the networks of those already participating.

Distribution of surveys

The lead clinician at each site was asked to estimate whether the prevalence of lesbians among female patients exceeded 30%. The 30% threshold and the methods of distribution were chosen in an effort to gather approximately equal numbers of heterosexual respondents and lesbian and bisexual women respondents. This estimate was readily available from the clinician. At sites where more than 30% of female patients were known to be lesbians (about half of the sites), surveys were offered to all women. At the remaining sites, surveys were distributed to patients who were known to be lesbians and to the next two female patients. Drop boxes at the sites and individual business reply envelopes were supplied to allow the surveys to be returned anonymously. Because the surveys were self-administered and anonymous, there was neither the intention nor the means to encourage women to complete and return the surveys.

Use of preventive health measures

A panel of experts, some from the panel mentioned above, defined appropriate measures of preventive health, based on the literature and their clinical experience. When possible, these measures were standardized to the definitions used in *Healthy People 2000,* which describes the objectives of the government's health promotion plans.[22] A woman 50 years of age or older was classified as having an appropriate level of preventive health care if she had had a cholesterol screening within the past 5 years and a mammogram within the past 2 years. Women of all ages were classified as practicing appropriate preventive health care if they had had a cervical smear within the past 2 years, screening for sexually transmitted diseases within the past 5 years, a breast examination carried out by a clinician within the past 2 years, if they examined their own breasts at least 3 times per year, if they used no illicit drugs in the past 30 days, if they were nonsmokers (defined as no smoking within the past 30 days), if they were not heavy drinkers of alcohol (defined as having 60 or fewer drinks per month, in the absence of binge drinking of 5 or more drinks on one occasion in the past 30 days), if they took regular aerobic exercise (defined as 20 minutes of aerobic exercise per session with at least 3 sessions per week), and if they practiced safer sex (defined by all the following criteria: ≤ 4 sex partners in the past 12 months; no known or suspected gay or bisexual male sex partners; no known or suspected injection drug use by male or female sex partners; if ≥ 2 sex partners in the past 12 months, usually or always uses barriers when having sex with men or women, and rarely or never drunk or high when having sex). Thirty-three of the 98 questions specifically measured preventive health care.

Data analysis

Data entry was performed and verified with double-keyed entry using statistical software (SAS, version 6; SAS Institute Inc, Cary, NC). The χ^2 test was used to compare categorical variables and sexual orientation. The Kruskal-Wallis test was used to compare numeric variables and sexual orientation. Multivariate logistic regression was used to control for demographic factors and sexual partner history.

RESULTS

Thirty-three sites across the United States agreed to participate; they were predominantly urban, private offices providing primary care services. However, there were also

community clinics, two chiropractic practices, and one naturopath's office. We used sites in Alabama, California, Georgia, Louisiana, Massachusetts, Minnesota, New York, Ohio, Oregon, Pennsylvania, Washington, and the District of Columbia.

From May 1, 1996, to February 14, 1997, 2,716 surveys were distributed; 1,362 were completed and returned, yielding a 50% response rate. The principal independent variable was self-identified sexual orientation. After excluding those surveys with incomplete information about sexual orientation, 1,304 surveys (48%) were available for analysis.

Characteristics of respondents are summarized in table 1. Six percent of heterosexual women, 87% of bisexual women, and 54% of lesbians reported having had sex with both men and women during their lifetimes. Respondents' sexual history during the past 12 months more closely reflected their reported sexual orientation: 0.5% of heterosexual women, 23% of bisexual women, and 3% of lesbians reported that they had had sex with both men and women in that time.

In contrast with previous surveys, body mass index (as calculated by respondents' reports of height and weight) did not differ according to sexual orientation (P = 0.09).[13,23]

Sexual orientation was associated with the health behaviors shown in table 2. Lesbians were about twice as likely as heterosexual women to have used illicit drugs in the past 30 days, and they were more than twice as likely as heterosexual women to have been tested for human

Table 1 *Characteristics of study population**

Characteristics	Sexual orientation: Heterosexual (n = 637)	Bisexual (n = 143)	Lesbian (n = 524)	Total population (n = 1,304)	*P* value
Age (mean)	41	36	39	40	<0.001
Race	n = 631	n = 141	n = 522	n = 1,294	
White (non-Hispanic)	518 (82)	115 (82)	445 (85)	1,078 (83)	
Black	55 (9)	6 (4)	18 (3)	79 (6)	
Asian	26 (4)	5 (4)	14 (3)	45 (4)	<0.01
Hispanic	12 (2)	8 (6)	18 (3)	38 (3)	
American Indian	9 (1)	3 (2)	10 (2)	22 (2)	
Mixed race	11 (2)	4 (3)	17 (3)	32 (3)	
Education completed	n = 633	n = 141	n = 522	n=1,296	
High school or less	73 (12)	5 (4)	21 (4)	99 (8)	
1–4 years college	333 (53)	75 (53)	249 (48)	657 (51)	<0.001
Graduate school	227 (36)	61 (43)	252 (48)	540 (42)	
Annual household income	n = 619	n = 137	n = 518	n = 1,282	
<$20,000	104 (17)	33 (24)	75 (14)	212 (17)	
$20,000–$39,999	159 (26)	33 (24)	94 (18)	286 (22)	
$40,000–$59,999	138 (22)	31 (23)	112 (22)	281 (22)	<0.001
≥$60,000	218 (35)	40 (29)	237 (46)	495 (39)	
Has healthcare insurance	n = 626	n = 142	n = 521	n = 1,289	
Yes	569 (91)	115 (81)	462 (89)	1,146 (89)	<0.01
Has main healthcare provider	n = 627	n = 142	n = 510	n = 1,279	
Yes	570 (91)	115 (81)	422 (83)	1,107 (89)	<0.001
Is married or in a committed relationship	n = 634	n = 141	n = 521	n = 1,296	
Yes	436 (69)	85 (60)	405 (78)	926 (71)	<0.001
Sexual partners in lifetime	n = 632	n = 138	n = 521	n = 1,291	
No partners	11 (2)	0 (0)	2 (<1)	13 (1)	
Men only	567 (90)	10 (7)	17 (3)	594 (46)	
Women only	18 (3)	8 (6)	220 (42)	246 (19)	<0.001
Men and women	36 (6)	120 (87)	282 (54)	438 (34)	
Sexual partners in past year	n = 621	n = 136	n = 505	n =1,262	
No partners	99 (16)	16 (12)	42 (8)	157 (12)	
Men only	513 (83)	48 (35)	3 (<1)	564 (45)	
Women only	6 (1)	41 (30)	446 (88)	493 (39)	<0.001
Men and women	3 (<1)	31 (23)	14 (3)	48 (4)	
Body mass index (mean)	25.62	26.10	26.17	25.89	0.09

*Values are numbers (percentages) unless indicated otherwise. Data are missing for some of the characteristics because some respondents did not answer all questions.

Table 2 *Relation between sexual orientation and health behaviors*

Health behavior measured	Bisexual compared with heterosexual		Lesbian compared with heterosexual	
	Odds ratio*	95% CI	Odds ratio*	95% CI
Has used illicit drugs in past 30 days	1.96	1.07 to 3.57	2.04	1.14 to 3.70
Has ever been tested for HIV	1.99	1.17 to 3.38	2.38	1.51 to 3.74
Has been infected with HPV	0.95	0.32 to 1.72	0.48	0.25 to 0.89
Practices safer sex	0.97	0.49 to 1.93	2.60	1.23 to 5.49
Has had appropriate cholesterol screening	0.29	0.11 to 0.73	0.53	0.25 to 1.13
Has had appropriate mammography	0.33	0.13 to 0.84	0.53	0.25 to 1.13

CI = confidence interval; HIV = human immunodeficiency virus; HPV = human papillomavirus.
*Odds ratio was adjusted for age, race, education, household income, number of sexual partners within the past 12 months, and number of lifetime sexual partners.

immunodeficiency virus. Lesbians were also half as likely as heterosexual women to have ever been infected with human papillomavirus. Of those women not in a committed relationship (defined by respondents answering "yes" or "no" to "Are you currently married or in a committed relationship?"), lesbians were 2.6 times more likely than heterosexual women to practice safer sex. Bisexual women were about twice as likely as heterosexual women to use illicit drugs and to have been tested for human immunodeficiency virus. Bisexual women were about one third as likely as heterosexual women to be classified as having had adequate cholesterol screening and adequate mammography.

All of the other measures of appropriate preventive health care were similar among the three groups (data not shown).

DISCUSSION

Many studies have found an association between a failure to conform with preventive health measures and an increased risk of preventable chronic diseases. It has been proposed that being bisexual or lesbian is associated with poorer use of preventive health measures. In this study, after controlling for standard demographic factors and gender of sexual partners in a person's lifetime, sexual orientation was associated with some preventive health behaviors (such as practicing safer sex and having cholesterol screening and mammography) that have important long-term health consequences.[22]

The finding that lesbians and bisexual women have higher rates of drug use in the past 30 days is worrying. The use of illicit drugs may be associated with unsafe sex practices and having poorer judgment while under the influence of drugs, although this was not confirmed in this study.[24] The frequency with which lesbians and bisexual women have sex with both men and women may also contribute to the spread of sexually transmitted diseases.[9]

In this study, rates of cigarette smoking (16.5%) and heavy drinking (13.1%) were equal among groups of women of different sexual orientations, in contrast with findings from studies that used convenience samples without control groups and that reported higher rates of cigarette and alcohol abuse by lesbians.[5,6] The only large study examining the amount of alcohol consumed by lesbians and a heterosexual control group also identified equal rates of heavy drinking in lesbians and heterosexual women (albeit markedly lower at 2% in each group).[25]

In this study, lesbians had had fewer human papillomavirus infections than the other two groups of women. However, infection with human papillomavirus and cervical dysplasia has been documented in women who have had only female sexual partners.[26,27] Thus, screening measures and recommendations about safer sex should be determined by sexual behaviors and other factors related to the risk of developing cervical dysplasia, rather than by perceptions of sexual orientation.

Bisexual women were the least likely to have been appropriately screened for cholesterol and to have had mammography. This is a potentially serious problem considering the low threshold used to define appropriate screening in this study.

As shown in previous studies, a person's lifetime sexual history correlates poorly with sexual orientation.[6,10,11,20] This is the first comparative study to evaluate the sex of current sexual partners and the sex of those in the participant's lifetime: 23% of the bisexual women and 3% of the lesbians reported having had sex with both men and women in the preceding 12 months. Surveys without control groups done in the late 1980s found that 8% (141 of 1,681) of lesbians who were surveyed in Michigan, most of whom were white, and 17% (101 of 605) of African American lesbians recruited nationally had had sex with men in the preceding 12 months.[3,6] This study found that during their lifetimes, 54% of the lesbian participants

had had sex with both men and women compared with findings of 78% to 91% in all previous similar studies.[3,4,6,9,20] It is unclear whether the difference between this and earlier studies of patterns of sexual behavior is caused by sampling differences or demographic differences (women in the healthcare setting compared with women attending lesbian community events) or actual changes in the sexual practices of lesbians as the gay and lesbian liberation movement has developed.

Because of the variability of sexual behavior among people of all sexual orientations, taking an accurate social and sexual history is important. Recommendations for obtaining such a history and the appropriate counseling of patients are given in the box.

Recommendations for providing inclusive care for patients

Use gender-neutral language (for example, use "partner" or "sexual partner" instead of husband or boyfriend)

Add categories for domestic partners or significant others to intake, insurance, and emergency contact forms

Remember that some women who have sex with women do not identify themselves as lesbian or bisexual but may use "gay" or "queer" or answer yes when asked if they have sex with women

Take an inclusive sexual history (for example, by asking "Do you have sex with men, women, or both?" or "Do have one or more than one sexual partner?" instead of "When did you last have sex?" or "When did you last have intercourse?")

Provide appropriate advice about safer sex and screening for sexually transmitted infections according to the patients' sexual behavior, not just their sexual orientation, instead of making assumptions about monogamy, marital status, or motherhood

Recommend contraception when appropriate (for example, ask "Do you need anything for contraception?" instead of "What do you use for birth control?")

Strengths and weaknesses of the study

This study has several strengths. It is the first study to compare the health of lesbian, bisexual, and heterosexual women in the same setting and after adjusting for important covariates. It is also the first large study to describe lesbian, bisexual, and heterosexual women who use the healthcare system. The study had a large sample size of 637 heterosexual women and 667 bisexual and lesbian women and many variables covering a wide range of health-related topics. The respondents came from different geographic areas and were recruited from a range of outpatient settings. The overall response rate of about 50% was high for an exploratory, descriptive study using a written, anonymous questionnaire distributed at different sites. Data were missing from less than 4% of the questionnaires even when questions of a sensitive nature had been asked.

There are, however, several limitations to this study. Biases in sampling limit the generalizability of the results. The respondents were predominantly young to middle-aged, white, insured, and of high socioeconomic and educational status. Future research using a different methodology might enable more women from racial minorities and women with poorer literacy skills to participate.

Characteristics of the sites and the physicians involved might also introduce bias. Although an effort was made to include a wide spectrum of practices, most of the respondents came from urban primary care practices. About half of the sites had a substantial proportion of lesbian and bisexual women as clients. These sites may be less biased toward providing care for heterosexuals than is generally the case. The practitioners at these sites are interested in research on women and preventive health and may be attuned to health issues that are important to lesbians.

Thus, multiple selection biases were introduced by respondents, sites, and practitioners. Reporting bias may have occurred, such as the underreporting of diseases and behaviors with negative associations, because of the sensitive nature of some of the questions. However, all of these biases should have been corrected by the use of an internal control group at each site.

Our findings apply to a group of women already seeking care. Similar problems of a larger magnitude may exist among women who do not have regular contact with the healthcare system.

Targets for intervention

These findings suggest that there are some specific targets for interventions among women already seeking care. Programs focusing on decreasing the use of illicit drugs by lesbians and bisexual women may be needed. All patients should receive standard health tests, such as cholesterol screening and mammography, regardless of their sexual orientation. Further studies are needed to understand why patients do not use preventive health services, how being a lesbian or bisexual woman is related to not observing guidelines on preventive health, and to address the vulnerability to avoidable diseases of certain groups of women who do not use healthcare services.

Bisexual and lesbian women seemed to be less likely to engage in preventive health behavior than heterosexual women. Given the current weight of evidence that supports an association between illicit drug use and suboptimal cholesterol and mammography screening with a variety of acute and chronic illnesses, encouraging women to make use of preventive health measures may significantly improve health outcomes in the population.

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COMMENTARY

Funding for more research is urgently needed

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Lesbian health has been understudied. Important issues need to be examined, such as access and barriers to care, whether appropriate services are being offered, and the health behaviors and health status of lesbians. Most research on lesbian health has relied on nonprobability samples, with limited information from studies that have included heterosexual women and that compared the 2 groups. Although this study is not probability-based, participants—lesbians and bisexual and heterosexual women—were sampled from groups of women in a variety of health care settings. The findings from this study are consistent with information from prior research. The study also highlights that lesbians may not be seeking the preventive care they need. Of note, the women in this study were lesbians who were already receiving medical care. They are not representative of lesbians (and heterosexual women) who have difficulty gaining access to the health care system.

This study shows the large gaps that exist in medical knowledge regarding lesbian health and the need for adequate support for the study of lesbian, gay, bisexual, and transgender health issues. Increased funding is vital. We need to perform probability-based studies, including population studies that will provide representative data identifying the health care issues of lesbians in this country. Population-based studies are also necessary to measure the differences between lesbians and heterosexual women in their access to health care, health status, and risk for poor health. Population-based samples indicate that significant differences exist in the access and receipt of care between these 2 groups and that lesbians are more likely not to receive medical care and to encounter barriers to

care (ALD, C Wold, K Spritzer, L Gelberg, unpublished data, 2000).[1]

Including items that assess sexual orientation and sexual behaviors in large studies such as the National Health Interview Survey would lead to a more accurate understanding of the types and extent of disparities in health care that exist for lesbians. The information obtained could be used to develop programs that focus on eradicating these disparities. A requirement to include lesbian, gay, bisexual, and transgender people in research studies, such as has been used to ensure that women and minority groups are represented, should also be strongly considered.

Standardization of the terms used in lesbian research is necessary to identify the health issues of concern to lesbians. Three dimensions are apparently used to define sexuality: sexual orientation, sexual behavior (sex of one's sexual partners), and sexual attraction or desire.[1(p31)] To validly assess the effects on health of being "lesbian," some measurement of these 3 dimensions is important. Women who identify themselves as lesbian and have male sexual partners may face different health issues than women who have female partners only. Research in this area is particularly important in setting the agenda to study lesbian health.

Factors that may put lesbians at risk for reduced access to and receipt of health care include a lack of health insurance and a history of adverse experiences within the health care system. Health care professionals not only should be trained in the mechanics of taking a sexual history but also should understand how to provide sensitive care that does not alienate lesbians from seeking the medical services they need. Health care professionals should be taught to ask all patients about their sexual history, including sexual orientation and the sex of their sexual partners (current and lifetime).

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Survey of directors of emergency departments in California on overcrowding

ABSTRACT **Objective** To survey the directors of emergency departments in California on their opinions of the extent and factors associated with overcrowding in emergency departments. **Methods** Surveys were mailed to a random sample of emergency department directors. Questions included estimated magnitude, frequency, causes, and effects of overcrowding. **Results** Of 160 directors surveyed, 113 (71%) responded, and 109 (96%) reported overcrowding as a problem. All (n = 21) university or county hospital directors and most (n = 88 [96%]) private or community hospital directors reported overcrowding. The 4 private or community hospital directors reporting no overcrowding serve smaller communities with populations less than 250,000. Thirty-two directors (28%) reported daily overcrowding. The most cited causes were increasing patient acuity and volume, hospital bed shortage, laboratory delays, and nursing shortage. These putative causes were similar between university or county and private or community hospital directors, except for consultant delays, which were more prevalent in university or county hospital emergency departments. **Conclusions** Overcrowding is perceived to be a serious problem by emergency department directors. Many factors may contribute to overcrowding, and most are beyond the control of emergency departments.

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There are more than 5,000 emergency departments in the United States, and 470 are in California. One of the key functions of the emergency department is as a public "safety net," providing care to patients who do not have access to primary care physicians and clinics.[1] Recently there has been increasing discussion regarding the ability of emergency departments to provide timely care to patients with emergency medical conditions.[2-5] The inability to provide timely service is often attributed to the overcrowded conditions that have developed in emergency departments across this country. Anecdotal evidence suggests that patients are subject to long delays compared with many years ago. The California State Department of Health has investigated some hospitals in recent years over incidents in which prolonged waits for patients have led to poor outcomes.[3]

Although overcrowding has been the topic of discussion among many emergency physicians and legislators, there are few documented studies. Overcrowding in emergency departments in some metropolitan academic centers

was described more than 8 years ago.[1,5] It is also an international problem, affecting countries with socialized health care and extensive primary care networks.[6-8] Several articles in the lay press have brought attention to the problem, but despite dramatic headlines and photos of congested emergency departments, these have been largely ignored by the state and federal government.[9,10] To further investigate the factors associated with overcrowding and estimate the extent of the problem, we conducted a survey study of directors of emergency departments in California.

Summary points

- Overcrowding is perceived to be a serious problem by California emergency department directors
- Many factors may contribute to overcrowding, and most are beyond the control of emergency departments
- Overcrowding in emergency departments may lead to poor patient outcomes
- As the population increases and ages, overcrowding will likely worsen in the future unless emergency services are expanded

METHODS

This survey study was conducted during the first 4 months of 1999. A total of 160 questionnaires was mailed to a sample of emergency department directors in hospitals in California (American Hospital Directory, Neptune, NJ) using a random number generator. Questions were asked about the demographics of the regional population, type of hospital, annual census, and bed capacity. University hospitals were included with teaching hospitals if they had a full-time residency program in 1 or more specialties. Questions were asked about possible factors that could influence any degree of overcrowding (table 1) and which time periods had the worst episodes of overcrowding. Putative causes of overcrowding were provided, and respondents were asked to rank these on a 5-point scale: 1 indicates not a cause; 3, somewhat of a cause; and 5, a major cause. Causes are listed in table 2. Respondents were also asked about the duration of the overcrowding problem and their impression of the effects this had on patients presenting to the emergency department, such as delayed diagnosis and treatment and the increased risk for poor outcomes. All responses were estimations, and the verification of responses with actual data was not requested.

RESULTS

Of 160 emergency department directors surveyed, 113 (71%) responded, and 109 (96%) said that overcrowding was a problem. There were 92 private and community (81%) and 21 university and county emergency department directors (19%) from whom surveys were collected. The 4 directors reporting no problem with overcrowding were at private facilities or those affiliated with communities and located in smaller communities serving populations less than 250,000. The directors chose from a list of circumstances defining overcrowding, and their agreement on this list is reported in table 1. Responses between private or community and university or county hospital directors were similar. The directors thought that overcrowding occurred several times per week (64%), and 28% of them reported daily overcrowding, mostly between 3 and 11 PM.

The reasons the directors gave for the perceived overcrowding are listed in table 2. A total of 90% of directors said that many patients had long waiting times, with an estimated 40% of patients being affected (table 3). Many directors reported delays in diagnosis and treatment. Several directors thought that these delays put patients at risk of poor outcomes, and there were actual poor outcomes as a result of overcrowding. The estimated effects on patients of these factors are shown in table 3. The directors also provided actual examples of poor outcomes: delays in patients receiving thrombolytic drugs after acute myocardial infarction, delay in patients being given analgesia for severe pain, delay in surgery for a patient with appendicitis, delay in a patient with severe dehydration being given fluids, and a patient with diabetic ketoacidosis who waited 2 hours for treatment. Two thirds (68%) of directors reported that overcrowding had developed within the past 5 years.

Table 1 *Selected circumstances defining emergency department (ED) overcrowding and level of agreement between directors of different facility types (n = 113)*

Specific circumstance	Total	Private or community hospital	University or county hospital
		% answering yes	
Patients wait >30 min to see physician	33	23	54
Patients wait >60 min to see physician	74	80	61
All ED beds filled >6 h/day	81	73	100
Patients placed in hallways >6 h/day	84	80	92
Emergency physicians feel rushed >6 h/day	81	83	77
Waiting room filled >6 h/day	58	77	92

DISCUSSION

In our study, emergency department directors overwhelmingly reported overcrowding as a problem in California hospitals. The problem is apparently not limited to county and teaching hospitals, but affects private hospitals as well. Discussion in the early 1990s provided evidence that overcrowding was primarily limited to teaching hospitals serving cities and urban areas.[5,10] Surprisingly, most of the

Table 2 *Perceived causes of overcrowding and comparison between facility types**

Reason	All hospitals (n = 113)	Median	Private/community hospitals (n = 92)	Median	County/university hospitals (n = 21)	Median
Managed care authorization calls	2.3 ± 1.3	2	2.3 ± 1.4	2	2.3 ± 1.0	3
Triage nurse too busy	2.8 ± 1.1	3	2.7 ± 1.1	3	3.0 ± 1.4	3
Increased volume	3.3 ± 1.5	3	3.4 ± 1.4	4	2.7 ± 1.6	3
Increased patient acuity	4.3 ± 0.9	5	4.4 ± 0.9	5	4.1 ± 0.9	4
Space limitations	3.2 ± 1.5	3	3.2 ± 1.5	3	2.9 ± 1.3	3
Nursing staff shortage	3.3 ± 1.3	3	3.2 ± 1.3	3	3.7 ± 1.3	4
Physician staff shortage	2.1 ± 1.1	2	2.1 ± 1.0	2	2.0 ± 1.0	2
Radiology delays	3.3 ± 1.1	3	3.3 ± 1.1	3	3.3 ± 1.1	3
Laboratory delays	3.4 ± 1.2	3	3.3 ± 1.2	3	3.7 ± 1.0	4
Consultation delays	3.3 ± 1.2	3	3.1 ± 1.1	3	4.1 ± 0.9	4
Hospital bed shortage	3.8 ± 1.2	4	3.7 ± 1.3	4	4.1 ± 1.0	4

*Directors answered on a 5-point scale: 1 = not a cause; 2 = minor; 3 = moderate; 4 = major; and 5 = severe. Data are given as mean ± SD.

directors of emergency departments serving communities of less than 250,000 reported overcrowding.

No simple definition exists that succinctly describes overcrowding, and the reasons for it are complex. Many of the factors leading to delays in patient care are associated with services beyond the control of the emergency department (table 2). One of the most cited contributors to overcrowding was shortage of hospital beds. When all hospital beds are full, patients who need admission must wait in the emergency department. This may limit their evaluation and treatment. As the population ages and life expectancy increases, a higher number of patients with several concomitant medical problems, such as congestive heart failure and chronic obstructive pulmonary disease, will be seen in emergency departments. This is thought to be a major contributor to overcrowding.[11] Another factor cited was the increasing volume of patients that need to be seen. As the population of California grows, the demand on emergency services will grow accordingly. In the early 1990s, shortages of nursing staff in emergency departments were thought to be a major contributor to overcrowding.[12] Nursing, laboratory, and radiology services in university or county hospitals are frequently overused and understaffed. Several directors also commented on the survey forms that overcrowded conditions in the emergency department were damaging the morale of nursing staff.

Directors of emergency departments reported that issues with managed care were a factor in overcrowding. California has led the nation in the development of managed care systems.[13] Managed care and health maintenance organizations discourage patients from using emergency services.[14] Several organizations have refused or delayed payments to emergency departments.[15] Managed care "gatekeepers" may call the emergency department and demand to speak with the emergency physician before authorizing care for a patient. This reduces the time emergency physicians are able to spend caring for patients.

Long waiting times cause frustration and may prolong pain and suffering. Delays may also occur in the diagnosis and treatment of serious medical conditions.

This study has limitations. The answers to the survey questions reflect the knowledge, experience, and opinion of the directors who responded and may have led to an overestimation of the problem. We assumed that directors have a good sense of how their emergency departments operate. We did not ask for verification of their responses because they may not have had access to such data. Causes of overcrowding were measured using an integer scale with adjectival descriptions such as minor, moderate, and major, which may represent only a perception of the overcrowding problem.

CONCLUSIONS

According to emergency department directors, overcrowding is a serious problem in California's university, county, and private hospital emergency departments in both urban and rural settings. Many factors appear to contribute to overcrowding, such as increasing patient volume and medical complexity, delays in laboratory and radiology

Table 3 *Estimated effects of overcrowding on emergency department patients and comparison between facility types**

Effect	Total	Private or community hospital	University or county hospital
Long patient waits	40.0 ± 26.7	36.9 ± 27.4	46.3 ± 25.1
Delayed diagnosis and treatment	27.1 ± 23.9	25.3 ± 24.8	31.0 ± 22.7
Extended pain and suffering	17.1 ± 15.9	14.7 ± 14.4	21.9 ± 18.2
Risk for poor outcomes	11.1 ± 13.1	11.9 ± 14.9	9.5 ± 8.7
Actual poor outcomes	1.9 ± 2.2	1.7 ± 2.2	2.6 ± 2.3

*Data are given as mean ± SD percentage.

services, and lack of empty hospital beds; these are beyond the control of the emergency department. Overcrowding may result in long waiting times for patients, increase the risk of adverse outcomes, and result in actual poor outcomes.

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COMMENTARY

Give emergency medicine true departmental control

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As early as 1958, confronted by a 400% rise in emergency department (ED) visits in 15 years, the medical community called for a modernization of the staffing patterns in emergency rooms.[1] This critical mass of need resulted in the establishment of the first "ER" and emergency physician group in 1961. Over the next 2 decades, emergency medical services developed, and emergency medicine became a specialty with its own training and board certification.

In 1966, the American Medical Assocation reviewed the increased use, staffing patterns, and quality of care in EDs and recommended "the recognition of the emergency service as a department" as "the first step in solving its problems."[2]

Since these early days, the number of patients attending EDs has continued to grow as much as 2% annually. In 1995, 100 million patients visited EDs in the United States. This huge increase occurred despite aggressive legislative and economic strategies led by managed care that aimed to shift patients away from EDs to their primary care physicians.

In 2000, Richards and colleagues report that ED overcrowding is once again a serious problem. The authors attribute it to many factors, most of which they think are beyond the control of EDs.

The recognition of the emergency service as a hospital department should be genuine and comprehensive. This must involve giving it true control over 3 key areas: decision making, financing, and maintaining efficiency.

The ED leadership should be able to directly monitor and alter the processes of patient registration and hospital admission. Access to emergency physicians, treatment delivery, and transfer to a floor or unit bed should not be delayed by, for example, the need for preauthorization. Managers of EDs should be empowered to monitor and seek solutions to lengthy delays in the provision of studies and their interpretations. Legislation is needed to mandate that adequate screening and stabilization are provided to patients before any preauthorization of care. Managed care gatekeepers are unable to reliably address the urgency of a complaint by telephone and should not second-guess the judgment of a treating emergency physician. Current law restricts the primary responsibility for the quality and outcome to the emergency physician and treating facility. Gatekeepers remain legally unaccountable for pressures they exert during preauthorization calls, despite inherent financial conflicts of interest. Legislation should prohibit prolonged authorization processes for poststabilization care, such as admission or specialized consultations. Emergency physicians should be enabled to designate the service to which a patient is admitted and to mobilize without delay emergent consultations they deem necessary. Managed care plans and hospitals must provide clear-cut on-call panels for all patients, regardless of their funding status.

Professional and facility charges for care provided in an ED should never be "bundled" with those of the inpatient care phase. Capitation rates for ED services should not be

bundled with primary care groups who are using them. Both forms of bundling will result in "reverse utilization," a process of convenient overuse of the ED safety net, which is mandated by federal law to see and provide care for all unscheduled patients. Emergency department resources and revenue must not be shifted away through taxation or management schemes that exceed fair market value. They are not meant for non-ED–related expenses or for profit-driven management corporations. They are needed within EDs to reduce overcrowding and to provide optimal care. Laws restricting the corporate practice of medicine should be enforced. Physicians and nurses provide patient care; they are not businesspeople.

To reduce costs, hospitals and insurers shift time-consuming tasks to the ED for each patient visit. New tasks have also been added, such as superfluous documentation and computerized order entries. Such "right-sizing" increases the time needed per patient, compounding the overcrowding. Staffing and resources should not be allocated based on average patient flow. A safety margin must be provided for the often-unpredictable peaks of patient volume and urgency. Finally, ED physician and nursing administrators should maintain clinical involvement to experience directly the results of their decisions.

Future population growth and aging will only worsen ED overcrowding. The right-sizing of emergency medicine and the shifting or bundling of its revenue are not new. They are, however, growing trends in this dynamic "marketplace." Doing more with less will no doubt compromise the quality of care for all our patients.

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Practice point

Keep looking for a reason

Sarah was 22 when she presented with the dreadful signs of a large space-occupying lesion deep in the dominant parietal lobe. She was drowsy with a severe headache, had severe dysphasia, and there was a signficant right-sided weakness. The CT scan said it all; a malignant intrinsic tumor at the trigone of the lateral ventricle, probably a glioblastoma.

She rallied a little on steroids overnight and so I performed a craniotomy, having suitably warned her worried family of the likely outcome and prognosis. I found a very bloody tumor that had some definition from the surrounding brain. The pathologist told me that the frozen section showed a highly malignant brain tumor, consistent with the radiologist's diagnosis.

The survival from this type of tumor in this position is measured in months, and there is no evidence that surgery does much more than relieve the pressure symptoms. Consequently, I completed a cautious internal decompression, stopped the bleeding, and closed up. She was unchanged, but bled into the tumor remnant the following day and I had to reopen the craniotomy. That night, I was relieved that she was no worse. Sarah's tumor was a gliosarcoma. This is a rare and even more malignant variant of a glioblastoma, in which it is thought that the new vessel-forming factors released by the primary brain tumor induce sarcomatous change in the blood vessels. The news was not good.

Surprisingly, Sarah started to get better. Her speech improved and her hemiparesis almost disappeared. She was referred for radiotherapy and underwent the full 6 weeks' course. The follow-up scan also looked good. She lost her job in an insurance company, but she became a police receptionist.

Two years went by, but there was no sign of the tumor on further scans. By then, Sarah had become a good friend of the hospital, active in collecting money for the development fund, and talking to the press about her treatment.

After 3 years, when the vast majority of patients with a glioblastoma are dead, I asked the pathologists to review the case, but despite the tumor's unusual behaviour, they could not come up with any other diagnosis.

Meanwhile, Sarah had married and was thinking of starting a family. By this time, much more sensitive magnetic resonance imaging had become more freely available, and the scan showed no recurrence. Six years after her initial diagnosis, I asked the pathologist to rereview the case. By now, immunocytochemistry was much more sophisticated, and despite the mitoses and other seemingly malignant features, he was able to reclassify the lesion as a much more benign pleomorphic xanthoastrocytoma.

When I told Sarah this exciting news, I was most surprised that it seemed unimportant to her, almost to the point of disinterestedness.

She remains well almost 10 years from when her initial diagnosis was rendered. Her scan is clear, but she still worries about recurrence. I worry about the possibility of radionecrosis, which sometimes afflicts long term survivors of brain irradiation.

I have learned 3 things from Sarah's case. First, that having lived with the diagnosis of having had cancer but being free from recurrence, being an unusual statistic with a semibenign condition of unknown behavior, lacks meaning. Second, when tumors behave in highly unusual ways, keep looking for a reason. Third, do not expect other patients' tumors to behave in a similarly unusual fashion—a temptation that I fell into at least once.

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Epidemiology of medical error

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Newspaper and television stories of catastrophic injuries occurring at the hands of physicians spotlight the problem of medical error but provide little insight into its nature or magnitude.[1] Physicians, patients, and policymakers may underestimate the magnitude of risk and the extent of harm. We review the epidemiology of medical error, concentrating primarily on the prevalence and consequences of error, which types are most common, which physicians make errors, and the risk factors that increase the likelihood of injury from error.

Summary points

- The Harvard and Australian studies of medical error are the only studies that provide population data on the rates of injuries of patients in hospitals, and they identified a substantial amount of medical error
- In the United States, medical error results in 44,000 to 98,000 unnecessary deaths each year and 1 million excess injuries
- Errors often occur when clinicians are inexperienced and new procedures are introduced
- Extremes of age, complex care, and a prolonged hospital stay are associated with more errors

PREVALENCE AND CONSEQUENCES IN HOSPITALS

Benchmark studies

The Harvard study of medical practice is the benchmark for estimating the extent of medical injuries occurring in hospitals. Brennan et al reviewed the medical records of 30,121 patients admitted to 51 acute care hospitals in New York State in 1984.[2] They reported that adverse events—injuries caused by medical management that prolonged admission or produced disability at the time of discharge—occurred in 3.7% of admissions.

A subsequent analysis of the same data found that 69% of injuries were caused by errors.[3] In a study of the quality of Australian health care, a population-based study modeled on the Harvard study, investigators reviewed the medical records of 14,179 patients admitted to 28 hospitals in New South Wales and South Australia in 1995.[4] An adverse event occurred in 16.6% of admissions, resulting in permanent disability in 13.7% of patients and death in 4.9%; 51% of adverse events were considered to have been preventable. The number of preventable adverse events is important because both preventable and potentially adverse events (or "near misses") imply medical error. In contrast, nonpreventable adverse events suggest that anticipated and unavoidable complications were present. In the Australian study, the higher rate of adverse events was attributed in part to methodologic differences between the 2 studies, but a real difference in the rate of injuries to patients in the 2 populations could not be excluded.

No study rivals the scope of the Harvard and the Australian studies except for a recent replication of the Harvard study in Colorado and Utah.[5] Even so, the results probably represent an estimate of the lower boundary of the prevalence of medical injury and error. The Harvard investigators defined adverse events stringently, using disability and injuty as prerequisites. This underestimates the error rate because many errors do not produce injury; they are caught in time, the patient is resilient, or luck is good.

Beyond medical record review

Aggressive case finding may identify injuries and errors that are not documented in patients' medical records.[6] Using a computerized model to detect adverse drug events among patients at a hospital in Salt Lake City, Utah, Classen et al found that adverse drug events occurred in 1.7% of admissions.[7] In comparison, using both medical record review and prompted self-reports from physicians, Bates et al found that adverse drug events occurred among 6.5% of patients and that potential adverse drug events occurred among 5.5% of patients admitted to 2 teaching hospitals in Boston.[8] Of the adverse drug events, 28% were due to errors, making the rate of serious medication errors—that is, preventable plus potential adverse drug events—7.3%. Both of these studies reported rates that are much higher than the 0.7% rate of adverse drug events identified in the Harvard study's review of medical records.

Observational studies, although costly, have identified even higher rates of error and injury occurring during medical care. For example, observers on the general surgical units of a Chicago teaching hospital who recorded all "situations in which an inappropriate decision was made when, at the time, an appropriate alternative could have been chosen" found that 45.8% of patients had an adverse event.[9] Eighteen percent of these patients had a serious adverse event—that is, one that produced at least temporary disability. Similarly, Donchin et al placed an observer at patients' bedsides to observe physicians in the medical-surgical intensive care unit of a university hospital in Israel.[10] Clinicians made 554 errors during 4 months, or 1.7 errors per patient per day. Patients injured as a result of a medical error stay in a hospital longer and have higher hospital costs. At the hospital in Utah, adverse drug events caused complications in 2.4% of admissions, cost an average of $2,262 per patient, and lengthened the stay by 1.9 days compared with matched controls.[11]

In the Harvard study of adverse drug events, the incremental cost associated with an event was $2,595, and the length of stay was increased by 2.2 days. Among preventable adverse drug events, however, the excess cost was $4,685, and the length of stay was increased by 4.6 days.[12] The cost of adverse drug events for a 700-bed teaching hospital was estimated to be $5.6 million a year. Thus, medical error is ubiquitous, and the costs are substantial. In Australia, medical error results in as many as 18,000 unnecessary deaths, and more than 50,000 patients become disabled each year. In the United States, medical error results in at least 44,000 (and perhaps as many as 98,000) unnecessary deaths each year and 1 million excess injuries.[13]

PREVALENCE AND CONSEQUENCES AMONG OUTPATIENTS

Comparatively little is known about the prevalence of medical error outside of hospitals. In both the Harvard and the Australian studies, about 9% of adverse events occurred in a physician's office, up to 3% at home, and as many as 2% in nursing homes. In the Australian study, about a quarter of the adverse events occurring among outpatients caused permanent disability or death, and investigators judged it likely that more than two thirds could have been prevented. In other studies, iatrogenic injury accounted for 5% to 36% of admissions to medical services[14-16] and between 11% and 13% of adult admissions to intensive care units at several university hospitals.[17-19] Because these studies included only errors that were serious enough to require admission, these figures underestimate the extent of error associated with outpatient care. Data on risk management also underestimate medical error occurring among outpatients because there is little association between malpractice claims and medical error.[20]

Asking physicians and patients about errors elicits more useful information. Burnum reported that in a series of 1,000 consecutive patients seen in his 3-person internal medicine practice, 42 adverse drug reactions occurred, of which 10 were preventable.[21] More recently, Bhasale et al collected anonymous incident reports from Australian general practitioners of "an unintended event . . . that could have harmed or did harm a patient."[22] Of 805 incidents involving drug treatment, diagnosis, and equipment, 27% had the potential to cause severe harm, and 76% were judged to have been preventable. In the most rigorous outpatient study, Gandhi et al evaluated complications associated with medications among patients at 11 primary care sites in Boston.[23] Of 2,258 patients who had had drugs prescribed, 18% reported having had a drug-related complication, such as gastrointestinal symptoms, sleep disturbance, or fatigue, in the previous year.

To calculate the cost of drug-related morbidity and mortality among outpatients in the United States, Johnson and Bootman asked pharmacists to estimate the probability of adverse outcomes occurring as a result of drug treatment.[24] The costs associated with adverse outcomes were taken from statistical and research reports. The authors calculated that drug-related problems accounted for 116 million extra visits to a physician per year, 76 million additional prescriptions, 17 million emergency department visits, 8 million admissions to hospital, 3 million admissions to long-term care facilities, and 199,000 additional deaths. The total cost was estimated to be $76.6 billion, rivaling the aggregate cost of caring for patients who have diabetes.

TYPES OF MEDICAL ERROR

In both the Harvard and the Australian studies, about half of the adverse events occurring among inpatients resulted from surgery. Complications from drug treatment, therapeutic mishaps, and diagnostic errors were the most common nonoperative events. In the Australian study, cognitive errors, such as making an incorrect diagnosis or choosing the wrong medication, were more likely to have been preventable and more likely to result in permanent disability than technical errors.[25] Adverse drug events have been investigated extensively because they are prevalent and preventable.

In Bates et al's study of adverse drug events at 2 teaching hospitals in Boston, 1% of the events were fatal, 12% were life-threatening, 30% were serious, and 57% were significant.[8] Of the adverse events classified as life-threatening or serious, 42% were preventable. Errors resulting in preventable adverse events occurred most often during ordering (56%) and administering (24%). Altogether, 245 of the near misses were the result of ordering errors, and 40% were the result of errors in administering drugs. Adverse events were associated with the use of analgesics, antibiotics, sedatives, chemotherapeutic agents, cardiovascular drugs, and anticoagulants.[8]

Missed and delayed diagnoses may be difficult to detect retrospectively by medical record review unless patients continue to use the same sources of care. In the Australian study, errors of omission outnumbered errors of commission by 2 to 1. An error of omission is a failure of action, such as a missed diagnosis, a delayed evaluation, or a failure to prescribe needed drug treatment. An error of commission is an incorrect action, such as administering the wrong drug to the wrong patient at the wrong time. Necropsy studies can also uncover missed diagnoses and misdiagnoses. A study of 61 patients who died in a Spanish emergency department identified unexpected major findings, such as malignant tumors or hemorrhagic pancreatitis, in 27 patients (44%) and important discrepancies between the necropsy report and the clinical diagnosis in 16 patients (26%).[26]

In a retrospective study of 524 deaths occurring in 1990-1991 at a Spanish tertiary care hospital, more than half of the risk of death was accounted for by adverse events that resulted from clinical care.[27] The number of misdiagnoses and major unexpected findings at necropsy has remained essentially unchanged for more than 40 years, prompting health care leaders to cite the falling rate of necropsy as an important impediment to ensuring the safety of patients.[28]

PHYSICIANS WHO MAKE ERRORS

Despite rare examples of malevolent physicians, there is little evidence that much medical error is due to "bad apples."[29] Although anesthesiologists pioneered modern research into the safety of patients, no specialty is immune to error.[30] Procedural mishaps are common in surgical specialties, perhaps because they are hard to disguise. Mistakes may be more common when a physician is inexperienced and when new techniques are introduced.[31] Misread radiographs and pathology specimens,[32] laboratory errors,[33] and mistakes made in administering radiation therapy also threaten the safety of patients.[34] Trainees often err. Wu et al surveyed medical house officers in 3 training programs in internal medicine about their most serious mistake.[35] Altogether, 45% reported making at least 1 error, 31% of which resulted in a patient's death. Lesar et al found that more prescribing errors occurred among first-year postgraduate residents than among other physicians.[36] Wilson et al found that more errors occurred in a pediatric intensive care unit when new physicians joined the rotation.[37]

RISK FACTORS FOR INJURY

A potentially attractive strategy for preventing injury from medical error is to identify which patients are at an increased risk of

harm. Patients older than 64 years, for example, have a greater risk of serious injury from adverse events than younger patients.[2,4,7,8] This may reflect their greater burden of comorbid illness and frailty. Certain interventions signal that there is a high risk, such as cardiothoracic surgery, vascular surgery, and neurosurgery. The severity of a patient's underlying illnesses and the inherent hazards of certain procedures may increase the likelihood of poor outcomes. Wilson et al found that a greater risk of death and a greater number of preventable adverse events were associated with patients with complex cases, illnesses requiring urgent care, and the use of interventions thought to be potentially lifesaving.[4] Being cared for in an emergency department causes many preventable adverse events.[2,4,38] Several factors are implicated: the use of part-time physicians not trained in emergency care; fluctuating demand for services, which results in uneven and sometimes abbreviated care; the limited time available to arrive at a definitive diagnosis; and the fact that emergency departments are the point of entry for acutely ill patients.

The characteristics of individual patients may be less important than the duration of care in explaining injury. Andrews et al reported that the likelihood of an adverse event increased by 6% for each day spent in a hospital.[9] The intensity of care also affects the risk of injuty. Among pediatric patients admitted to a British university hospital, drug errors were 7 times more likely to occur in the intensive care unit than elsewhere.[37] Similarly, the Harvard investigators looking at adverse drug events found that these events occurred more often among adult patients in medical intensive care units than in surgical intensive care units or general medical and surgical wards.[39] When the number of doses dispensed in the different units was adjusted for, however, the differences were not significant. In a subsequent analysis of the study, no independent risk factors for preventable adverse events were identified after the length of stay before the event and the use of intensive care were controlled for.

DISCUSSION

Although researchers regularly publish studies of medical error, adequate epidemiologic information is limited to a few institutions, procedures, and specialties. Because most studies were conducted in academic referral centers, the results may not be generalizable to community-based hospitals and outpatient care facilities.

Comparing studies is difficult because research methods are not standardized. The lack of agreement about methods and the variable rigor of their application contribute to the variations found in error rates. There is a serious need for researchers to use consistent definitions and methods and for collaborative work on measuring error. Systems for monitoring and reporting error could provide the platform from which more detailed studies of subpopulations could develop. However, expecting that individuals will carry out health care flawlessly creates an environment in which clinicians are reluctant to report their errors. Universal underreporting, in turn, undermines the ability to measure error accurately. For these reasons, the precise prevalence and magnitude of medical error is unknown, but it is probably enormous.

We are aware of no study showing that medical care can be provided without error. In fact, the more closely we examine patient care, the more error we find. No setting is free from hazards; no specialty is immune; and patients are at risk no matter what their age, sex, or health status. But the risk is not homogeneous. Patients who are sicker, subjected to multiple interventions, and remain in hospital longer are more likely to suffer serious injury as a result of medical mistakes. Unless we make substantial changes in the organization and delivery of health care, all patients—particularly the most vulnerable—will continue to bear the burden of medical error.

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Human error: models and management

The problem of human error can be viewed in 2 ways: the person approach and the system approach. Each has its model of error causation, and each model gives rise to different philosophies of error management. Understanding these differences has important practical implications for coping with the ever-present risk of mishaps in clinical practice.

Summary points

- The problem of human fallibility has 2 approaches: the person and the system
- The person approach focuses on the errors of individuals: forgetfulness, inattention, or moral weakness
- The system approach concentrates on the conditions under which people work and tries to build defenses to avert errors or mitigate their effects
- High-reliability organizations, which have fewer accidents, recognize that human variability is the approach to averting errors, but they work hard to focus that variability and are preoccupied with the possibility of failure

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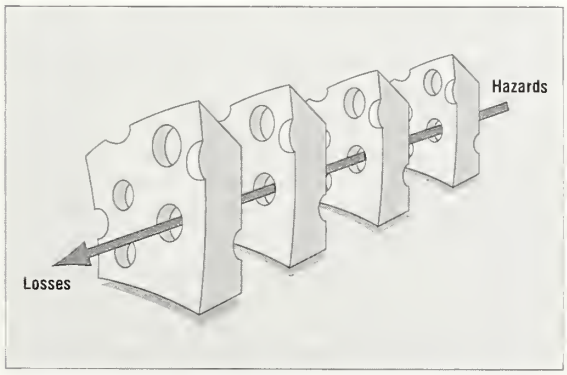
PERSON APPROACH

The long-standing and widespread tradition of the person approach focuses on the unsafe acts—errors and procedural violations—of people on the front line: nurses, physicians, surgeons, anesthetists, pharmacists, and the like. It views these unsafe acts as arising primarily from aberrant mental processes such as forgetfulness, inattention, poor motivation, carelessness, negligence, and recklessness. The associated countermeasures are directed mainly at reducing unwanted variability in human behavior.



The Swiss cheese model of how defenses, barriers, and safeguards may be penetrated by an accident trajectory

These methods include postet campaigns that appeal to people's fear, writing another procedure (or adding to existing ones), disciplinary measures, threat of litigation, retraining, naming, blaming, and shaming. Followers of these approaches tend to treat errors as moral issues, assuming that bad things happen to bad people—what psychologists have called the "just-world hypothesis."[1]

SYSTEM APPROACH

The basic premise in the system approach is that humans are fallible and errors are to be expected, even in the best organizations. Errors are seen as consequences rather than causes, having their origins not so much in the perversity of human nature as in "upstream" systemic factors. These include recurrent error traps in the workplace and the organizational processes that give rise to them.

Countermeasures are based on the assumption that although

US Navy

HIGH-RELIABILITY ORGANIZATIONS

So far, three types of high-reliability organizations have been investigated: US Navy nuclear aircraft carriers, nuclear power plants, and air traffic control centers. The challenges facing these organizations are twofold:

- Managing complex, demanding technologies so as to avoid major failures that could cripple or even destroy the organization concerned
- Maintaining the capacity for meeting periods of very high peak demand whenever these occur

The organizations studied[7,8] had these defining characteristics:

- They were complex, internally dynamic, and intermittently, intensely interactive
- They performed exacting tasks under considerable time pressure
- They had carried out these demanding activities with low incident rates and an almost complete absence of catastrophic failures over several years

Although on the face of it, these organizations are far removed from the medical domain, they share important characteristics that are clearly relevant for those who manage and operate health-care institutes.

we cannot change the human condition, we can change the conditions under which humans work. A central idea is that of system defenses. All hazardous technologies possess barriers and safeguards. When an adverse event occurs, the important issue is not who blundered, but how and why the defenses failed.

EVALUATING THE PERSON APPROACH

The person approach remains the dominant tradition in medicine, as elsewhere. From some perspectives, it has much to commend it. Blaming individuals is emotionally more satisfying than targeting institutions. People are viewed as free agents capable of choosing between safe and unsafe modes of behavior. If something goes wrong, a person (or group) must have been responsible. Seeking as much as possible to uncouple a person's unsafe acts from any institutional responsibility is clearly in the interests of managers. It is also legally more convenient, at least in Britain.

Nevertheless, the person approach has serious shortcomings and is ill-suited to the medical domain. Indeed, continued adherence to this approach is likely to thwart the development of safer health care institutions. Although some unsafe acts in any sphere are egregious, most are not. In aviation maintenance—a hands-on activity similar in many respects to medical practice—about 90% of quality lapses were judged blameless.[2]

Effective risk management depends crucially on establishing a reporting culture.[3] Without a detailed analysis of mishaps, incidents, near misses, and "free lessons," we have no way of uncovering recurrent error traps or of knowing where the edge is until we fall over it. The complete absence of such a reporting culture within the Soviet Union contributed crucially to the Chernobyl disaster.[4] Trust is a key element of a reporting culture, and this in turn, requires the existence of a just culture—one possessing a collective understanding of where the line should be drawn between blameless and blameworthy actions.[5] Engineering a just culture is an essential early step in creating a safe culture.

Another serious weakness of the person approach is that by focusing on the individual origins of error, it isolates unsafe acts from their system context. As a result, 2 important features of human error tend to be overlooked. First, it is often the best people who make the worst mistakes—error is not the monopoly of an unfortunate few. Second, far from being random, mishaps tend to fall into recurrent patterns. The same set of circumstances can provoke similar errors, regardless of the people involved. The pursuit of greater safety is seriously impeded by an approach that does not seek out and remove the error-provoking properties within the system at large.

THE "SWISS CHEESE" MODEL OF SYSTEM ACCIDENTS

Defenses, barriers, and safeguards occupy a key position in the system approach. High-technology systems have many defensive layers: some are engineered (alarms, physical barriers, automatic shutdowns), others rely on people (surgeons, anesthetists, pilots, control room operators), and yet others depend on procedures and administrative controls. Their function is to protect potential victims and assets from local hazards. They are mostly effective at this, but there are always weaknesses.

In an ideal world, each defensive layer would be intact. In reality, they are more like slices of Swiss cheese, having many holes—although, unlike in the cheese, these holes are continually opening, shutting, and shifting their location. The presence of holes in any one "slice" does not normally cause a bad outcome. Usually this can happen only when the holes in many layers momentarily line up to permit a trajectory of accident opportunity—bringing hazards into damaging contact with victims (figure). The holes in the defenses arise for 2 reasons: active failures and latent conditions.

Nearly all adverse events involve a combination of these 2 sets of factors. Active failures are the unsafe acts committed by people who are in direct contact with the patient or system. They take a variety of forms: slips, lapses, fumbles, mistakes, and procedural violations.[6] Active failures have a direct and usually short-lived effect on the integrity of the defenses. At Chernobyl, for example, the operators violated plant procedures and switched off successive safety systems, thus creating the immediate trigger for the catastrophic explosion in the core. Followers of the person approach often look no further for the causes of an adverse event once they have identified these proximal unsafe acts. But, as discussed later, virtually all such acts have a causal history.

Latent conditions are the inevitable "resident pathogens" within a system. They arise from decisions made by designers, builders, procedure writers, and top-level management. Such decisions may be mistaken, but they need not be. All such strategic decisions have the potential for introducing pathogens into the system. Latent conditions have 2 kinds of adverse effect: they can translate into error-provoking conditions within the workplace (for example, time pressure, understaffing, inadequate equipment, fatigue, and inexperience), and they can create long-lasting holes or weaknesses in the defenses (untrustworthy alarms and indicators, unworkable procedures, design and construction deficiencies). Latent conditions—as the term suggests—may lie dormant within the system for many years before they combine with active failures and local triggers to create an accident opportunity. Unlike active failures, whose specific forms are often hard to foresee, latent conditions can be identified and remedied before an adverse event occurs. Understanding this leads to proactive rather than reactive risk management. To use another analogy: active failures are like mosquitoes. They can be swatted one by one, but they still keep coming. The best remedies are to create more effective defenses and to drain the swamps in which they breed. The swamps, in this case, are the ever-present latent conditions.

ERROR MANAGEMENT

In the past decade, researchers into human factors have been increasingly concerned with developing the tools for managing unsafe acts. Error management has 2 components: limiting the incidence of dangerous errors and— this will never be wholly effective—creating systems that are better able to tolerate the occurrence of errors and contain their damaging effects. Whereas followers of the person approach direct most of their management resources to trying to make individuals less fallible or wayward, adherents of the system approach strive for a comprehensive management program aimed at several targets: the person, the team, the task, the workplace, and the institution.[3]

High-reliability organizations—systems operating in hazardous conditions that have fewer adverse events—offer important models for what constitutes a resilient system. Such a system has intrinsic "safety health"; it is able to withstand its operational dangers and still achieve its objectives.

SOME PARADOXES OF HIGH RELIABILITY

Just as medicine understands more about disease than health, so the safety sciences know more about what causes adverse events than about how they can best be avoided. In the past 15 years or so, a group of social scientists based mainly in Berkeley, California, and the University of Michigan at Ann Arbor has sought to redress this imbalance by studying safety successes in organizations rather than their infrequent but more conspicuous failures.[7,8] These success stories involved nuclear aircraft carriers, air traffic control systems, and nuclear power plants (see box). Although such high-reliability organizations may seem remote from clinical practice, some of their defining cultural characteristics could be imported into the medical domain.

Most managers of traditional systems attribute human unreliability to unwanted variability and strive as far as possible to eliminate it. In high-reliability organizations, it is recognized that human variability in the shape of compensations and adaptations to changing events represents one of the system's most important safeguards. Reliability is "a dynamic nonevent."[7] It is dynamic because safety is preserved by timely human adjustments; it is a nonevent because successful outcomes rarely call attention to themselves.

High-reliability organizations can reconfigure themselves to suit local circumstances. In their routine mode, they are controlled in the conventional hierarchic manner. But in high-tempo or emergency situations, control shifts to the experts on the spot—as it often does in the medical domain. The organization reverts seamlessly to the routine control mode once the crisis has passed. Paradoxically, this flexibility arises in part from a military tradition—even civilian high-reliability organizations have a large proportion of ex-military staff. Military organizations tend to define their goals in an unambiguous way and, for these bursts of semiautonomous activity to be successful, it is essential that all the participants clearly understand and share these aspirations. Although high-reliability organizations expect and encourage variability of human action, they also work hard to maintain a consistent mindset of intelligent wariness.[8]

Perhaps the most important distinguishing feature of high-reliability organizations is their collective preoccupation with the possibility of failure. They expect to make errors and train their workforce to recognize and recover them. They continually rehearse familiar scenarios of failure and strive hard to imagine novel ones. Instead of isolating failures, they generalize them. Instead of making local repairs, they look for system reforms.

CONCLUSIONS

High-reliability organizations are the prime examples of the system approach. They anticipate the worst and equip themselves to deal with it at all levels of the organization. It is hard, even unnatural, for individuals to remain uneasy over the long term, so their organizational culture takes on a profound importance. Individuals may forget to be afraid, but the culture of a high-reliability organization provides them with both the reminders and the tools to help them remember. For these organizations, the pursuit of safety is not so much about preventing isolated failures, either human or technical, as about making the system as robust as is practicable in the face of its human and operational hazards. High-reliability organizations are not immune to adverse events, but they have learned the knack of converting these occasional setbacks into enhanced resilience of the system.

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Sport medicine and the ethics of boxing

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OVERVIEW

Against commentators who support a ban on boxing, others see the sport as an expression of individual liberty and recommend that the medical community work toward improving safety in boxing.[1] Defenders of boxing concede, for instance, that beating the opponent's head is the standard route to victory. They may even admit that this poses health risks. Where both sides in this debate become wary is at the thought of physicians interfering in the lifestyle choices of athletes. In the light of this apprehension, the moral options for sport physicians deserve examination.

Exact figures on the prevalence of boxing injuries are hard to find and often do not distinguish between injuries attributable to boxing and those exacerbated by the physical contact, even in training. Also, whether professional boxing should be considered in the same analysis with amateur boxing is debatable.[2] Having said this, we generally accept the survey of the health risks that Ryan[3] and Cantu[4] provide, which shows that concussion and brain damage are the most prominent dangers. Conceding that much research still needs to be done before we can know with certainty the nature of boxing injuries, it is safe to say that human anatomy is at odds with the preferred tactic in boxing, which is to strike the opponent's head.

Summary points

- Sport physicians are uniquely situated to assess and act on the evidence of health risks to boxers
- Given the apparent risk of permanent brain damage, sport physicians should take a public stand against this sport, to the extent that therapeutic obligation permits
- This should include efforts to educate the public and an open disassociation from the sport

THE ETHICAL CASE FOR PHYSICIAN ACTION

Paternalism

This raises an obvious question of what physicians should do in response to the medical evidence. Should they continue to treat boxing injuries and perhaps work toward reform of the rules and equipment of the sport? Or should physicians take a stronger stand against boxing? Some commentators worry about the latter course. They contend that physicians who try to prevent boxing injuries can easily abuse their power and good intentions. The traditional concern, not unique to sport medicine, is paternalism—that is, "how to get people to do what is good for them without tyrannizing them."[5(p26)] In the boxing debate, such concern focuses on whether physicians would know when to put the brakes on. "If we are to prevent young boxers from hitting each other," one critic claims, "consistency seems to demand that we should also prevent them from engaging in a variety of other activities which are as dangerous . . . as boxing."[6(p59)] Another critic asks if the next step would be to ban birth control and "gay lifestyles."[7] To this end, critics claim that legal restrictions would unduly infringe on the boxers' autonomy. They typically cite 19th century philosopher John Stuart Mill, who offers a strong libertarian argument against restricting private behavior.[8]

On the traditional interpretation, Mill would allow a person to engage in nearly any behavior, so long as it was freely chosen and did not infringe on the autonomy of others. With this interpretation in mind, commentators argue that boxers should be, at most, advised of the risks of boxing and left to decide for themselves whether to box. Still, a critique of boxing need not amount to physician tyranny or autonomy infringement. The interpretation of autonomy, and its application to the problem of boxing, is more complicated than libertarian slogans let on. In particular, the critique of boxing can represent the fusion of medical and ethical judgment that arises from any definition of sport. That is, society relies on physicians to assist in setting limits on what constitutes permissible sport. Hence, there is nothing unusual or dangerous about their offering guidance on the health-related aspects of boxing.

Indeed, Mill's theory of individual freedom actually calls the ethics of boxing (not its legal status) into question. Mill feared state intervention into private affairs because he thought that "some projects are more worthy than others, and liberty is needed precisely to find out what is valuable in life, to question, re-examine, and revise our beliefs about value."[9(p18)] The idea is that if autonomy is deemed important, it has to matter what effect the sport of boxing has on a boxer's ability to direct his or her life, including decisions about participating in boxing. Hence, on the assumption that medical evidence adequately shows that there is a risk that boxers might, through ordinary training and competition, diminish their own ability to select

goals and to apply methods of attaining them, this evidence supports a strong condemnation of the sport.

Attempts to apply Mill's account of autonomy to matters of personal health are problematic because his views on political liberty are somewhat opposed by his views on personal responsibility for health.[10] Nonetheless, libertarians clearly cannot have it both ways. Once we allow respect for autonomy into the calculation, regardless of which definition of autonomy we adopt, we must cater as well to the preconditions for that autonomy. It is significant, therefore, that libertarians advocate personal freedom because it enables citizens to refine their goals. A condemnation of boxing is consistent with this. As long as physicians restrict themselves to medical advocacy, there is little risk of autonomy infringement. Also, aside from what sport physicians say about boxing, ultimate control over paternalism resides with elected officials and legislators, who, unlike physicians, make and enforce laws.

Obligations and expertise

Physicians of other specialties attempt to influence public attitudes about such things as smoking, handguns, and improper diet. Admittedly, this creates an ambiguous public role, and the history of physician activism is a checkered one. One historian notes, for instance, that the same medical associations that successfully campaigned against women's corsets as being unhealthy for respiration helped convince the public of a "link" between female masturbation and insanity.[11] The lesson from episodes like this is that sport physicians must combine the courage to be wrong with the conscience to amend a position as evidence accumulates. As always, physicians will have to make decisions about boxing amid shifting clinical and social contexts.[12] But neither the difficulty in knowing the optimum level of physician responsibility nor the problem in achieving certainty about boxing's risks should preclude action.

Physicians routinely take risks of their own when they decide to put their efforts toward the repair or the prevention of injuries in boxers and other athletes. Here, too, a critical stance against boxing is a logical extension of this process. We suggest a stance against boxing that requires not omniscience, but a presumption of greater knowledge of the specific risks involved.[13] In a similar way, the existence of prescription drug laws does not indicate that physicians always know more than patients, only that they know more about specific drugs and their effects. We advocate an approach to the boxing issue based on what Hauerwas labels "fallible medicine,"[14] whereby physician and patient assume incomplete knowledge at the outset. This has both partners recognizing the possibility of minor oversight.[14] Under this physician-patient model, the sport physician would strive to educate as well as treat patients, with the assumption that "to be autonomous, one must be informed."[15(p330)]

In this light, physicians who let patients reason in what amounts to a state of ignorance or misinformation are as irresponsible as those who would try to impose idiosyncratic values on the lifestyle choices of patients. Where they know of avoidable health risks, such as those associated with boxing, sport physicians have to do more than present facts. They must present conclusions based on those facts, even if this sometimes casts a negative light on certain behaviors.

PROBLEMS WITH THE REFORMIST POSITION

This returns us to the issue of what precisely sport physicians ought to do. All sports represent a compromise in personal freedom and safety between the need to pursue enjoyable and lucrative activities and the need to avoid injuty. By convention, physicians join society in drawing the line when it comes to how injuries may occur and how to reduce the risk. In hockey and football, research into the nature and prevention of head injuries has led to rule and equipment changes.[16] These changes, the result in part of physician intervention and advice, have made it possible to retain the essential nature of these contact sports without endangering players' heads.[17]

Should sport physicians, therefore, work to reform boxing? This is a hard question to answer because it is doubtful that reform will solve the medical and moral problems in boxing.[18] Past efforts have ranged from prohibiting punches below the belt (the Broughton rule of 1743) to more sweeping rule changes against holding, butting, gouging, kicking, and the wearing of spiked shoes. In 1866 the Marquis of Queensbuty rules called for the wearing of gloves in all bouts, a 10-second count after a knockdown, and fighters to be matched within weight categories. Later reformers limited the number and length of rounds and awarded broader discretionary power to referees. With additional reform, medical evaluations and the wearing of mouthpieces became standard, and some states, such as New York, have taken steps to reduce injuries further.[19,20]

Unfortunately, refinement of diagnostics and improved education of boxers, trainers, and ringside doctors will take us only so far. What will persist is the boxer's underlying goal: the contest often goes to the boxer who can punch the opponent into submission or unconsciousness. In matches based on points, the decision often goes to the boxer who excels in aggressiveness and injures or knocks down the opponent through punches to the head. In professional boxing, the incentive is direct: the scoring and ranking system gives priority to the fighter who is able to knock the opponent out. (The differences between amateur and professional boxing vary by country. The official versions of the scoring and rule differences in Canadian boxing are available on the web sites of the Canadian Amateur Boxing Association [www.boxing.ca] and the United States Amateur Boxing Association [www.usaboxing.org].) Even in amateur boxing, where the knockout is less common, there is still a risk of concussion from blows to the head. Hence, in amateur or professional boxing, what would reform ultimately involve? Would the fight need to be stopped after each punch to diagnostically assess the trauma?

CONCLUDING RECOMMENDATIONS

The obvious and more practical solution would be along the lines of rule changes that may penalize punches to the head. This would no doubt reduce some health risks.[21] The rule changes would at the same time create a substantially different sport and leave open the question of whether the new boxing would be an athletic activity that sport physicians should welcome as "reformed." Would it be ethically improved, for example, if some other body part were the target area for scoring in boxing? This matter aside, the prudent option seems to be for sport physicians to work with athletes and society and to reevaluate the idea that sport should involve people battering each other until one of them can no longer go on or until the body is damaged.

The reformist view holds that the sport medicine community can take other practical steps. Should the consent forms used with boxers be improved? This idea has merit, but questions about what boxers would consent to would remain. In medicine and law, the consent form usually reflects nonmaleficence—protecting the patient from unanticipated risks. The best consent form would perhaps waive a boxer's entitlement to nonmaleficence, even to protection from self-imposed harm. Nevertheless, at risk is not only the boxer's body but also that of the opponent. Clarifying the idea of a person consenting to harm another person and to be harmed in the process is no simple matter. This complexity only confirms that a signed consent form is never the same as ethical closure.

For their part, the major medical associations appeal to legislative authority to ban boxing. For a number of reasons we offer only qualified support for these efforts. First, talk of a ban should be accompanied by a willingness in the sport medicine community to reform or reinstate boxing if new evidence supports this. Second, the community needs to work toward broad changes in public attitudes about boxing and, equally important, the sport physician's role in it. We maintain, therefore, that the sport physician should assume a greater role in educating the public, not simply boxers, of the risks involved. This should include repeated, consistent scrutiny of the preventive measures that have been proposed thus far, such as protective equipment and even routine medical screenings.

We also urge a more overt step: for sport physicians to refuse direct participation in boxing. The mere presence of a sport physician at a boxing match lends an air of legitimacy to behavior that is medically and ethically unacceptable. The absence of the "fight doctor" at ringside would send a strong, clear message to those affiliated with boxing. Physicians of any specialty should continue to treat those who are injured. In those efforts, the distinction between direct and indirect participation would probably prove difficult to establish.[22] Nevertheless, we suggest that there are ways to discharge the therapeutic obligation without going near the boxing ring.

A discontinuation of open participation with boxing would be an expression of the physician's right to act on values or interests that are important for the profession and the preservation of physician autonomy. One physician who had reservations when a patient asked for medical certification to box describes the essence of this right. "The human cranium is not designed to have repeated blows directed at it," he explains, "and is likely to be damaged by a sport where this is the main aim."[23(p69)] In the end, he decided that: doctors have rights too, and why should I spend the weekend worrying about his cauliflower ears and subdural hemorrhage? So like Pontius Pilate I washed my hands (a well-known medical ploy to gain time) and in the eleventh minute told him that I had no intention of signing his form, and that if he insisted on damaging his, or someone else's brain, then he must find another medical accomplice.

There is precedent for the avoidance of any connection with boxing in the near-unanimous position against physician involvement in capital punishment.[24,25] There, physicians who have significant moral objections to state-sponsored executions have taken a visible stand against any association that the practice may have with the medical community. Clearly, there are differences in severity between these 2 cases, but the principle is the same: physicians are entitled to obey their own consciences, which may include taking unpopular stands for the good of the profession and their patients. In particular, sport physicians and others in health care who best understand the mechanism for boxing injury can end their direct involvement with boxing, on the grounds that participation is contrary to the goal of improved public health and their personal integrity.

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Acute mountain sickness: the "poison of the pass"

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Few sights are more breathtaking and inspirational than a mountain peak. Yet, behind the innocence and majesty of one of nature's wonders lies a sleeping evil, acute mountain sickness (AMS). The constellation of symptoms that characterizes AMS is a frequent cause of morbidity and occasionally mortality and affects 25% of travelers sojourning to altitudes between 1900 and 3000 m (about 6,200-9,850 ft).[1] Joseph de Acosta, a Jesuit priest, presented the first classical account of the physical symptoms associated with mountain sickness in 1604 during a climbing expedition to Peru[2]:

> I was suddenly surprised with so mortal and strange a pang, that I was ready to fall from the top to the ground. . . . I was surprised with such pangs of straining and casting as I thought to cast up my heart too: for having cast up meate, fleugme and choller both yellow and greene, in the end I cast up blood with the straining of my stomach. To conclude, if this had continued I should undoubtedly have died.

These early accounts of *ladrak,* a Tibetan term that literally translates to "poison of the pass," are not far removed from complaints of frontal headaches, lassitude, insomnia, and peripheral edema experienced by modern-day AMS sufferers. These symptoms usually resolve within 4 to 5 days but, if left untreated, may progress to the life-threatening malignant forms of high-altitude pulmonary and cerebral edema. Although the precise mechanisms of AMS and its related sequelae remain elusive, a low hypoxic ventilatory drive, water retention, and increased vascular permeability are recognized as the most important pathophysiologic factors.[3] Arterial oxygenation decreases as a function of the hypobaria at terrestrial altitude, and thus tissue hypoxia is considered a trigger for these changes.

The constellation of symptoms that characterizes AMS is a frequent cause of morbidity and occasionally mortality

We recently participated in a medical expedition to the world's third highest mountain (K3), Kanchenjunga (8586 m [28,169 ft]), which was designed to increase knowledge and awareness of altitude-related illnesses. Our aims were to determine the physiologic implications of AMS and to establish constitutional risk factors that may be important in its pathogenesis. Specific attention focused on metabolic events that could result in changes in vascular permeability and the subsequent formation of edema.

Douglas Diekema

Illnesses are common among climbers who ascend to high altitude

Our preliminary findings raise questions about the structural integrity of muscle or cardiac cell membranes at high altitude and its role in the pathogenesis of AMS. The source of membrane damage, which may be more pronounced in subjects presenting with AMS, may be linked to an increased activity of oxygen-free radicals. Changes in vascular function at high altitude as a consequence of increased free radical–mediated oxidative stress may also prove a topic worthy of investigation in the future. Whether increased susceptibility to membrane damage as the result of a deficient antioxidant defense system is the cause or consequence of AMS and related sequelae remains to be elucidated.

Physical symptoms associated with upper respiratory and gastrointestinal tract illnesses are ubiquitous among mountaineers who ascend to high altitude. Although these illnesses may present without an infectious cause, the role of some potentially immunoprotective amino acids needs to be investigated. For example, previous accounts indicate a decrease in plasma glutamine concentrations at altitude,[4] a conditionally essential amino acid required for optimal lymphocyte proliferation and macrophage phagocytosis.[5] This decrease in plasma glutamine may increase a mountaineer's susceptibility to opportunistic infections. The subsequent release of vasoactive inflammatory mediators may be implicated in the pathogenesis of localized pulmonary edema, which would exacerbate arterial hypoxemia, physiologic phenomena that could account for at least some of the debilitating symptoms ascribed to AMS. We are currently conducting a double-blind placebo-controlled glutamine supplementation study in the Himalayas to explore further the possible link between infection and susceptibility to AMS.

Cachexia, which is an almost inevitable consequence of high-altitude mountaineering, may also be related to possible changes

in immunoreactivity and, although previously considered a maladaptive response, may prove to be of functional significance. The major sources of nitrogen for glutamine formation are the branched-chain amino acids, their metabolism being largely confined to skeletal muscle.[6] A decrease in serum concentrations of the branched-chain amino acids previously observed at high altitude[7] may signal for the endogenous catabolism of skeletal muscle to provide a constant supply of these amino acids and thus glutamine.

The use of AMS prophylactics such as acetazolamide, which functions as a respiratory stimulant by inhibiting carbonic anhydrase, has become increasingly popular among mountaineers. Alternative strategies that incorporate nutritional supplementation with amino acids and antioxidants at high altitude may also prove useful in the battle against AMS. Understanding, preventing, and treating altitude illness remain a constant challenge for the mountain physiologist.

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A book to make you think

Champion of Women and the Unborn: Horatio Robinson Storer, MD Frederick N Dyer, Science History Publications, $39.95, pp 626

Horatio Robinson Storer (1830-1922) is a historical figure to cause indignation among supporters of a woman's right to choose contraception and abortion. He motivated the American Medical Association into a "physicians' crusade" against abortion in the United States in the 19th century. The resulting antiabortion legislation did untold harm or untold good, depending on your view, and the Supreme Court did not revoke much of it until 1973.

He was as much against contraception, holding that all available methods including "use of a sponge, cold injections, the employment of condoms or the so-called womb guard, or that worst measure of all, incomplete intercourse" contributed to uterine disease. In 1870, he discounted evidence from the Oneida community that their common practice of delayed or suppressed ejaculation was harmless.

It would be easy to dismiss Storer as an example of the repressive attitudes of his time, but he would have seen himself as a progressive, advocating the best medical care for women in a world that often mistreated them. He used his considerable surgical skill to pioneer improvements in gynecology and was the first physician in the United States to give a complete collegiate course on diseases of women as distinct from midwifery. He urged the use of chloroform to relieve the pain of childbirth and deplored the policy of refusing to admit unmarried women to lying-in hospitals. He was also a champion of the oppressed, whether black citizens or immigrant Europeans.

Storer was born into a Protestant family in Boston, although he converted to Catholicism at the age of 49. The boundaries between natural science and medicine were less distinct than now, and his father, David Humphreys Storer, was a keen ichthyologist who became professor of obstetrics and medical jurisprudence at Harvard and president of the American Medical Association (Horatio was to become vice-president). Revealing anecdotes about his famous contemporaries are delights in a biography that contains a lot of less interesting detail.

Storer seems to have been one of those people who live long and exert great influence despite apparent chronic ill health. The list of his achievements is considerable. But despite the author's best efforts, he does not emerge from these pages as an attractive figure. Every quarrel is documented, but women's voices, apart from his devoted daughter's, are almost absent.

Storer disapproved of female physicians, especially after an unhappy collaboration at an all female hospital, although he mellowed towards them in later years. He married three times, but we can only guess at his real feelings about women and what they thought of him. His first wife seems to have had a severe mental illness related to menstruation.

His descriptions of female patients are at odds with present day sympathies, which is exactly why they should be read by those with a special interest in the history of women's bodies and the eternal debate over the morality of abortion.

Jeanette Cayley

Featherstone Road Clinic, Southall, UK

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Toolbox

How to talk about sex with patients who are not heterosexual

see also p. 403

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West J Med 2000;172:401-402

Talking about sex and sexuality is difficult for most patients and physicians. But for the 10% of the population who identify themselves as lesbian, gay, bisexual, or transgender,[1,2] discussing sex can be even more confusing and uncomfortable. Many patients are unwilling to disclose their sexual orientation for fear of retaliation and discrimination. Unfortunately, the biases and prejudices of society are not always left at the door to the examination room and may affect the quality of health care received by patients who are lesbian, gay, bisexual, or transgender.

Health care professionals often assume that their patients are heterosexual, which can create unease in the patient-physician relationship. The assumption of heterosexuality, or heterosexism, not only makes patients feel uncomfortable, but can also lead a physician to neglect certain aspects of health care and to provide inappropriate counseling. Some physicians are openly hostile, destroying patient trust and breaching patient confidentiality.

I present a hypothetical case of Kate, a 23-year-old female graduate student, on her first visit to a health clinic. For the purposes of this article, I will focus on the sexual history, providing examples of improper questions and suggestions of alternative ways of obtaining an appropriate sexual history.

I NEED TO ASK YOU SOME QUESTIONS THAT I ASK OF EVERY PATIENT ON THEIR FIRST VISIT TO THE CLINIC. ARE YOU SEXUALLY ACTIVE?

Although this is a good start, patients should be reassured that the conversation is confidential before they are asked to disclose their sexual history. For many lesbian, gay, bisexual, and transgender patients, the fear of insurance, professional, and social repercussions prevents them from being open about their sexuality. Confidentiality is especially important to adolescents, who risk being ostracized from their families and peers if their sexual orientation should become known.

> Health care professionals often assume that their patients are heterosexual

WHAT FORM OF BIRTH CONTROL ARE YOU USING?

By questioning Kate about birth control, the physician is assuming she is in a heterosexual relationship. When she replies that she does not use birth control, she receives a stern warning on the risks of pregnancy and sexually transmitted diseases. An alternative line of questioning is more useful: "Are you sexually active with men, women, or both? What forms of protection and/or contraception do you use?"

HOW MANY MEN HAVE YOU HAD SEXUAL RELATIONSHIPS WITH?

A thorough sexual history is important to provide adequate patient care and counseling.

10% of patients are not heterosexual

However, asking Kate specifically about her past relationships with men will again make her uncomfortable and neglect her past relationships with women. Patients will often answer only the question asked. Therefore, unless open questions are asked, vital parts of a patient's history will be missed. In this case, gender-neutral terms should be used: "How many people have you had sexual relationships with? How many were with men? How many with women?"

PEOPLE PARTICIPATE IN A VARIETY OF SEXUAL ACTS. EACH ACT CARRIES A DIFFERENT RISK FOR THE TRANSMISSION OF SEXUALLY TRANSMITTED DISEASES. HAVE YOU EVER HAD UNPROTECTED SEX, INCLUDING ORAL OR ANAL SEX, WITH THESE MEN?

The physician should explain why such personal details need to be asked. Here, the physician continues to focus on unprotected heterosexual acts, ignoring much of Kate's sexual life. Questions should be more open-ended to cover the diverse range of sexual behavior, with the use of examples when required: "People participate in a variety of sexual acts with their partners. What acts have you participated in with your partners? Have you ever had digital-vaginal, oral-anal, or oral-vaginal sex or used sex toys, for example? What sorts of protective barriers did you use?"

In this case, Kate's reply is useful: "When

Steps to creating a nonhomophobic environment

- Place a "Lesbian, Gay, Bisexual, or Transgender–Safe Place" sticker on the clinic door
- Place posters, pamphlets, and other reading material in the waiting area and examination rooms that are oriented to lesbian, gay, bisexual, and transgender people
- Discuss and respect issues of confidentiality
- Use gender-neutral terms such as "partner" or "significant other"
- Be aware of your own prejudices and biases and how they may affect your conversation
- Know the distinction between sexual orientation and sexual behavior. Sexual behavior, not sexual orientation, confers risk of sexually transmitted diseases
- Reassure lesbian, gay, bisexual, and transgender patients that they are normal
- Be aware of local and national resources for these patients
- Do not assume that all patients, friends, family, and colleagues are heterosexual
- Do not refer patients to colleagues and/or services known to be homophobic or unsupportive
- Do not try to guess who is gay, lesbian, bisexual, or transgender
- Do not try to persuade a patient to choose a sexual orientation

I was with each of the 2 men, we had vaginal intercourse and used condoms. With my first ex-girlfriend, we shared a dildo. We tried oral-anal sex once and fisting this other time. But with my other ex and my current girlfriend, it has been strictly manual-vaginal stimulation and oral-vaginal sex. We've always used gloves and dental dams when we've been together, though."

Whereas this may require further questioning regarding specific acts and the protection used with each act, it is more thorough than the initial inquiry. It opens the door for educating the patient about the risks associated with each act and how to prevent sexually transmitted diseases. Patients may need reassurance that sexual experimentation is normal and that they will not be judged on their sexual activities.

During the interview, Kate is distressed and exasperated as the physician continues the heterosexist line of questioning. Finally, the physician notices her discomfort and asks her what's wrong. She angrily replies that she is a lesbian, is currently in a relationship with a woman, and finds the questions insensitive and inappropriate. (Note that this is highly unlikely in reality. Patients are more likely to maintain their silence and never return to the health clinic.)

I APOLOGIZE. HOW LONG HAVE YOU BEEN A LESBIAN? WHEN DID YOU DECIDE YOU WERE A LESBIAN?

These are inappropriate questions. Just as the following questions sound ridiculous to ask of heterosexuals, they can be offensive to sexual minorities: "When did you realize you were heterosexual? How did people react when you told them you were heterosexual?"

> Questions should be more open-ended to cover the diverse range of sexual behavior

ARE YOU COMFORTABLE WITH YOUR OWN SEXUALITY? HAVE YOU SOUGHT THERAPY FOR THIS?

Although it is important to discuss how comfortable Kate is with her own sexuality, being a lesbian does not automatically make her a candidate for therapy. By asking if she needs therapy, the physician is implying that being lesbian is a mental illness and that it requires a cure. Being homosexual is not an illness and, therefore, does not require treatment or a cure.

Patients need to be reassured when they are discussing their sexuality: "I realize that dealing with your own sexuality can be difficult. Many people struggle with this issue, whether they are heterosexual, gay, lesbian, bisexual, or transgender. How do you feel about your own sexuality?"

> Unfortunately, the biases and prejudices of society are not always left at the door to the examination room

In addition, the physician should acknowledge societal restraints on sexual expression, but emphasize that most physicians do not subscribe to those viewpoints: "Many people mistakenly believe homosexuality is wrong. Have you experienced any such difficulties or discrimination?"

CONCLUSIONS

The above suggestions present an alternative approach to the difficult task of discussing sex and sexuality with patients. By phrasing questions in a gender-neutral, nonjudgmental manner, a thorough sexual history can be obtained while improving patient-physician rapport. Other methods of creating a nonhomophobic environment are outlined in the accompanying box.

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capsule

Bottled water contains more bugs Officials in Cleveland, Ohio, keep a close eye on the content and purity of tap water. They care much less about the content and purity of bottled water, even though Americans drink 4 billion gallons of it each year. Perhaps that is why some of the bottled samples in a comparative study contained 10 times more bacteria than tap water (*Arch Fam Med* 2000; 9:246-250). The authors note that water companies have to report water quality to the public or face prosecution. Manufacturers of bottled water have no such obligation.

Best Practice

TOPIC IN REVIEW

Health care problems of lesbian, gay, bisexual, and transgender patients

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Summary points

- Lesbian, gay, bisexual, and transgender patients are at increased risk of suicide, eating disorders, substance misuse, and breast and anal cancer
- Fear and lack of knowledge by both providers and patients can lead to suboptimal or no provision of health care
- Practitioners need to improve awareness and take steps to create an open, nonhostile environment
- Community outreach, education, and research are necessary to attain optimum health care for this population

About 10% of the population is lesbian, gay, bisexual, or transgender.[1,2] These people face health care risks that are often not addressed because of lack of knowledge of the patient's sexual orientation, ignorance of specific health care issues, or because the patient feels that the health care professional is homophobic. The goals of this article are to educate health care professionals on specific health care issues faced by this community.

Only a limited amount of information is available on health care risks within the lesbian, gay, bisexual, or transgender population. Most studies do not address sexual orientation. Fear of stigmatization prevents many people from identifying themselves as lesbian, gay, bisexual, or transgender. In addition, many do not seek health care (and are therefore excluded from health studies) because of prior negative experience. As many as two thirds of physicians never ask patients about their sexual orientation.[3] Some health care professionals assume that their patients are heterosexual. Others may be homophobic and hostile and prefer to avoid the issue.

METHODS

A MEDLINE search was conducted using "homosexuality" paired with specific health care terms such as "substance abuse," "breast cancer," "cervical cancer," and "suicide." Because of the paucity of research on the specific health care issues facing the lesbian, gay, bisexual, and transgender population (except for human immunodeficiency virus [HIV] infection or acquired immunodeficiency syndrome in homosexual men), the search was conducted on 1980 to current databases.

As many as two thirds of physicians never ask patients about their sexual orientation

HEALTH RISKS

Depression and suicide

In the controversial report of the Secretary of the Department of Health and Human Services, Task Force on Youth Suicide in 1989, Gibson estimated that gay youths account for 30% of completed suicides.[4] Forty percent of lesbian, gay, bisexual, or transgender youth have either attempted or seriously contemplated suicide. Gay men are 6 times more likely to attempt suicide than their heterosexual counterparts; lesbians are twice as likely to attempt suicide as heterosexual women.[4] In general, suicide attempts by gay men are more severe than those of their heterosexual counterparts.[5] Risk factors associated with an increased likelihood of suicide attempts included nonconforming to gender (for example, men in more feminine gender roles), self-identification as gay or bisexual at a young age, first homosexual experience at an early age, history of sexual or physical abuse, and rejection from important social supports.[5,6]

Adults are also at risk. Some people do not realize their sexual orientation until adulthood and face social isolation, fear of discrimination at work, and loss of loved ones. Suicide prevention awareness and intervention (table) have been shown to decrease the number of suicide attempts and completions.[7]

Substance misuse

Early reports on drug and alcohol use in the lesbian, gay, bisexual, and transgender community suggested that substance abuse affected about a third of the adult gay population (L H Fifield, J D Lathan, C Phillips, "Alcoholism in the Gay Community: the Price of Alienation, Isolation, and Oppression," a project of the Gay Community Services Center, Los Angeles, 1977). More recent population-based surveys found few differences in drinking patterns and frequency of drug misuse between homosexual and heterosexual men.[8] Comparisons of lesbian and heterosexual women showed no differences in

Table

Suicide prevention techniques	
Warning signs of suicide	• Changes in eating or sleeping habits • Increasing isolation from family and friends • Tendency to become more active and aggressive than usual • Lower academic grades • Giving away valued possessions and/or increased interest in getting "life in order" • Talking about or threatening suicide • Sudden and intense interest in religious beliefs and the afterlife • Experiencing recent loss, such as death of a loved one, or a close friend moving away • Misuse of drugs and/or alcohol
Suicide prevention	• Provide counsel, and, if possible, resolve the problem or reduce the level of stress experienced • Meet on a regular basis to provide active support • Refer to community support groups as needed • Provide a list of community agencies/providers if mental health services are needed. Ensure that these professionals are supportive of lesbian, gay, bisexual, and transgender population
Imminent suicide	• Activate emergency medical system (call 911) in a life-threatening emergency • Notify the parents, unless they are suspected to be the reason for the youth's actions • Provide and maintain constant professional supervision • Provide the youth and his/her parents with a list of community resources (crisis centers, mental health clinic, hospital, etc)

alcohol consumption, although lesbians and bisexual women were more likely to report being recovering alcoholics.[9,10]

Gay men use a wider variety of drugs, such as marijuana, "poppers" (amyl nitrite or butyl nitrite), methylenedioxyamphetamine (MDA), barbiturates, ethyl chloride, and amphetamines.[8] Although causality cannot be determined, a history of consistent use of inhalants, amphetamines, and cocaine is strongly associated with HIV seroconversion, independent of injection drug use.[11]

About 35% of gay men and 38% to 43% of lesbians reported smoking cigarettes in the past month. This exceeds national averages found in the 1990 National Household Survey on Drug Abuse, which reported current cigarette smoking in 27% of men and 22% of women.[12] Health care professionals should actively assess the extent and context of substance misuse in their lesbian, gay, bisexual, and transgender patients. Patients should be referred to treatment and support groups (see box p 405) that are sensitive to this population.

Antigay violence

In 41 of 50 states, discriminating against an employee—firing or refusing to hire—based solely on his or her sexual orientation is still legal (www.ngltf.org). In addition, most states do not include sexual orientation under hate crime laws.

In an environment that offers little protection and an abundance of homophobic sentiment, many people are subject to antigay violence and harassment. In a survey of college students and faculty at Yale University, 65% of the lesbian, gay, bisexual, and transgender population had experienced verbal insults. A fourth were threatened with physical violence.[13]

Health care professionals should create a safe, nonjudgmental environment for battered patients—such as posting sticker-notices to indicate safe zones for the lesbian, gay, bisexual, and transgender population—and take an active role in stopping the perpetration of antigay sentiment among colleagues. In addition, professionals should be aware of community support systems within schools and workplaces.

PROBLEMS OF YOUTH

School-related problems

More than 95% of lesbian, gay, bisexual, and transgender youth feel separated and emotionally isolated from their peers because they feel different. Almost half of gay youth and 20% of lesbians are verbally or physically assaulted in secondary school.[4] Lesbian, gay, bisexual, and transgender youth are 4 times more likely to be threatened with a weapon on school property than their heterosexual counterparts.[14] Lesbian, gay, bisexual, and transgender youth are 5 times more likely to miss school for fear of their personal safety; 28% of these students drop out of high school.[14,15]

Substance misuse

Nearly 60% of bisexual and gay male youths in 1 study were currently using substances and met psychiatric criteria for substance misuse.[16] Lesbian, gay, bisexual, and transgender youths are 9 times more likely to use injectable drugs. They also are more likely to engage in sexual

Lesbian, gay, bisexual, and transgender resources

General

National Gay and Lesbian Task Force (NGLTF)
2320 17th St, NW
Washington, DC 20009-2702
(202) 332-0207 voice
(202) 332-6219 TTY
http://www.ngltf.org

National Black Lesbian and Gay Leadership Forum (NBLGLF)
1612 K St, NW Suite 500
Washington, DC 20006
(202) 483-6786
e-mail: nblglf@nblglf.org
http://www.nblglf.org

Federation of Parents and Friends of Lesbians and Gays (PFLAG)
1101 14th Street, NW, Suite 1030
Washington, DC 20005
(202) 638-4200
http://www.pflag.com

Bisexual Resource Center (BRC)
PO Box 639
Cambridge, MA 02140
(617) 424-9595
e-mail: brc@biresource.org
http://www.biresource.org

Renaissance Transgender Association
987 Old Eagle School Rd, Suite 719
Wayne, PA 15087
(610) 975-9119
e-mail: info@ren.org
http://www.ren.org

Straight But Not Narrow
PO Box 71202
Marietta, CA 30007
(770) 242-2256
e-mail: sbnn@mindspring.com
http://dislecksea.home.mindspring.com/sbnn.html

Gay and Lesbian National Hotline
(888) 843-4564
http://glnh.org

National Latino/a Lesbian, Gay, Bisexual, and Transgender Organization (LLEGO)
1612 K Street, Suite 500
Washington, DC 20006
AquiLGBT@LLEGO.org
http://www.llego.org

Professional organizations

Gay and Lesbian Medical Association (GLMA)
459 Fulton St, Suite 107
San Francisco, CA 94102
(415) 255-4547
e-mail: info@glma.org
http://glma.org/indexmain.html

Lesbian, Gay, and Bisexual People in Medicine Committee of the American Medical Students Association (LGBPM-AMSA)
1902 Association Dr
Reston, VA 20191
Contact: Ruth Michaelis
(703) 620-6600, ext 458
e-mail: rmichaelis@siumed.edu
http://www.amsa.org/sc/lgbpm.html

Association of Gay and Lesbian Psychiatrists (AGLP)
4514 Chester Ave
Philadelphia, PA 19143-3707
(215) 222-2800
e-mail: aglpnat@aol.com
http://members.aol.com/aglpnat/homepage.html

Youth and community resources

!OutProud! The National Coalition for Gay, Lesbian, Bisexual, Transgender Youths
369 Third St, Suite B-362
San Rafael, CA 94901-3581
e-mail: info@outproud.org
http://www.outproud.org

Advocates for Youth
1025 Vermont Ave, NW, Suite 200
Washington, DC 20005
(202) 347-5700
e-mail: info@advocatesforyouth.org
http://www.youthresource.com

National Directory of Lesbian and Gay Community Centers
One Little West 12th St
New York, NY 10014
(212) 620-7310
e-mail: webmaster@gaycenter.org
http://www.gaycenter.org/natctr

Youth Assistance Organization
e-mail: webmaster@youth.org
http://www.youth.org

activity, use cocaine, and smoke marijuana and tobacco before age 13.[17]

Suicide

It is estimated that lesbian, gay, bisexual, and transgender adolescents are 3 times more likely to attempt suicide than their heterosexual counterparts.[14] Of those who are homeless, about half have attempted suicide at least once.[18]

Homelessness

Many lesbian, gay, bisexual, and transgender youth leave their home because of stresses in the family environment or because they are thrown out by homophobic parents.[19] Many foster homes will not accept openly gay, lesbian, bisexual, or transgender youth because of homophobia and fear of predation on other children in the home. About 6% of all runaway youth identify themselves as gay

or lesbian.[18] In certain locales, lesbian, gay, bisexual, and transgender youths make up a much larger percentage of runaways: 40% of street youths in Seattle and 30% of runaway youths in Los Angeles.[15]

Antigay violence

In a study of lesbian, gay, bisexual, or transgender youth, 40% had experienced violent physical attacks. The Massachusetts Governor's Commission on Gay and Lesbian Youth in their 1993 education report cited numerous anecdotes of physical assaults by both peers and family members.[15]

Prostitution

Many lesbian, gay, bisexual, and transgender youth have low self-esteem and resort to prostitution to survive and to escape physical, sexual, and emotional abuse in their homes and schools. On the street, they are victims of rape, exploitation, drug misuse, and at risk of contracting HIV.[17]

Health care professionals should take a detailed sexual history, including the number and sex of previous partners, specific activities engaged in, and the use of preventive measures

LESBIAN HEALTH

Cervical cancer

In a recent national survey, only 54% of lesbian and bisexual women had been given a cervical smear within the past year, and 7.5% had never had a Papanicolaou smear.[20] This is partially due to the misconception of both lesbians and health care professionals that lesbians are not at risk of cervical cancer.[21] In one study, 30% of lesbians and bisexual women had a history of sexually transmitted diseases.[22] There are several case reports of cervical intraepithelial neoplasia and infection with human papillomavirus in women who admit to sexual activity only with women.[23,24] In one study of women with no history of sex with men, 14% had cervical intraepithelial lesions.[25] Sexually contracted diseases are thought to be transmitted through vaginal secretions and possibly fomites, such as sex toys.[23,26] Physicians should recommend cervical screening according to current guidelines and teach safe sex techniques to prevent the transmission of human papillomavirus between sexual partners.

Breast and endometrial cancer

Lesbian and bisexual women are less likely to use oral contraceptives, more likely to be nulliparous, and more likely to smoke cigarettes than heterosexual women—all risk factors for breast and endometrial cancer.[9,27] Studies on the number of lesbian and bisexual women having mammography compared with heterosexual women are contradictory, with 1 national survey showing the former population more likely to have mammography—although most respondents were white and well educated[20]—and others showing they are less likely to either have mammography or examine their own breasts.[27] Health care professionals should recommend annual screening according to guidelines. They should also be aware of local support groups for lesbians with breast cancer.

Sexually transmitted diseases

Recent evidence suggests that it is possible to transmit diseases from woman to woman through sexual activity.[23] Although there is no clear evidence of woman-to-woman transmission of HIV, several cases have been reported where the only known risk factor was sexual contact with a woman.[26] The virus has been detected in cervical and vaginal secretions throughout the menstrual cycle. Sexual behaviors thought to be associated with increased risk of transmission include vaginal-vaginal contact, cunnilingus, anilingus, digital or manual vaginal or anal contact, and insertion of sexual devices or toys into the mouth, vagina, or anus. Sex toys such as dildos, vibrators, and anal-insertive devices may cause trauma and increase the risk of HIV transmission. The sharing of toys without disinfection between partners may allow exchange of infected fluids.[26] Unprotected oral-genital contact can lead to oropharyngeal carriage of gonorrhea. Oral-anal intercourse may transmit gastrointestinal infections such as *Giardia lamblia* and *Entamoeba histolytica*.[28]

Health care professionals should take a detailed sexual history, including the number and sex of previous partners, specific activities engaged in, and the use of preventive measures such as condoms, gloves, and dental dams. Practitioners should educate their lesbian and bisexual female patients on the risks of sexually transmitted diseases and the proper use of protective barriers.

GAY MALE HEALTH

Eating disorders

Gay men have higher rates of dieting and binge eating than heterosexual men.[29] One study found that clinical

eating disorders could be diagnosed in 17% of gay men, 14% of heterosexual women, 4.2% of lesbians, and 3.4% of heterosexual men surveyed.[30] Health care professionals should refer patients with eating disorders to community groups and specialists who are sensitive to gay issues.

Sexually transmitted diseases

The association between anal-receptive intercourse and increased risk of HIV transmission has long been established and is thought to be due to HIV entrance at points of mucosal trauma.[26] Anal-receptive intercourse is associated with an increased risk of infection with HIV, human papillomavirus, hepatitis B virus, and herpesvirus. Anal- and oral-insertive (during fellatio) intercourse is strongly associated with urethritis, including gonococcal and chlamydial infection. Oral-receptive intercourse increases the risk of HIV and pharyngeal gonorrhea infection.[31] Oral-anal intercourse may lead to gastrointestinal infection caused by organisms such as *G lamblia*; *E histolytica*; *Shigella, Salmonella,* and *Campylobacter* species; and hepatitis A virus.[28]

Because each sexual behavior carries a separate risk of transmitting disease, health care professionals must assess sexual activity. Physicians must also assess the competency of their patients to use preventive measures. One study of gay men found that more than 80% of them did not know how to use condoms appropriately.[32]

Anal cancer

The risk factors for the development of anal cancer are a history of anal-receptive intercourse; history of genital warts; herpes simplex virus, type 2, infection; hepatitis B virus infection; history of chlamydial infection; and being a current smoker.[33]

Patients who practice anal-receptive intercourse and are infected with HIV have a greater risk of developing high-grade anal intraepithelial neoplasia and anal cancer.[34] Physicians should examine the anal area of patients practicing anal intercourse and search for predisposing diseases and anal cancer.[35]

TRANSGENDER HEALTH

Transgender persons are those who maintain a strong and persistent cross-gender identification, not merely a desire for any cultural advantages of being the other sex. Transgender persons are considered by the American Psychiatric Association to have gender identity disorder. Those who are transgender (transsexual) face even greater challenges than lesbians, gays, and bisexuals. They are a minority within a minority group. Therefore, they may be at greater risk for depression, suicide, substance abuse, and antigay violence, although this has not been studied.

Transsexuals may seek gender reassignment surgery. The process of gender reassignment is long and involves psychiatric, endocrinologic, and surgical evaluation. People begin hormone therapy before any surgical procedure. In addition to the risk of thromboembolism and liver abnormalities with estrogen use, there is also the rare possibility of pituitary prolactinoma developing.[36] For female-to-male transgender persons, androgen therapy carries an increased risk for heart disease, endometrial hyperplasia, and subsequent endometrial carcinoma.[37]

One study of gay men found that more than 80% of them did not know how to use condoms appropriately

Gender reassignment surgery may cause sexual dysfunction, especially with sexual responsivity.[38] In addition, although the neovagina in male-to-female transsexuals is relatively resistant to infection, cases of gonococcal urethritis and vaginitis have been reported.[39] Those who use hormone therapy but decide not to undergo surgery continue to be at risk for endometrial cancer (female-to-male persons) and prostate cancer (male-to-female persons).[37,40]

Physicians need to be especially sensitive to the psychosocial and medical status of their transgender patients. Some patients choose to be called by a name that may conform more to their ideal gender.

CONCLUSIONS

Lesbian, gay, bisexual, and transgender persons face unique health care risks. Further research is needed to fully evaluate the health care issues facing this population. Community outreach is needed to educate people on their health risks, the need for screening, and preventive measures.

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The Challenge of Preventive Medicine in the Year 2000

"We are under no illusion that preventive strategies will be easy to implement. For a start, the costs of prevention have to be paid in the present, while its benefits lie in the distant future. And the benefits are not tangible—when prevention succeeds, nothing happens. Taking such a political risk when there are few obvious rewards requires conviction and considerable vision."

K Annan, Secretary General of the United Nations[1]

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Best Practice

CLINICAL EVIDENCE

Infectious disease: diarrhea

This article comes from *Clinical Evidence* (1999;2:267-273), a new resource for clinicians produced jointly by the BMJ Publishing Group and the American College of Physicians–American Society of Internal Medicine. *Clinical Evidence* is an extensively peer-reviewed publication that summarizes the best available evidence on the effects of common clinical interventions gleaned from thorough searches and appraisal of the world literature. It became available in the United States late last year. Please see advertisement for more information or, alternatively, visit our web site at www.evidence.org.

QUESTIONS: What are the effects of empiric antibiotic treatment in travelers' diarrhea? What are the effects of empiric antibiotic treatment in community-acquired diarrhea?

Summary points

- In randomized controlled trials, empirically treating travelers' diarrhea with antibiotics reduces the length of illness by 1 or 2 days
- In randomized controlled trials of community-acquired diarrhea, the use of ciprofloxacin reduces the duration of diarrhea by 1 or 2 days; in trials of the use of other antibiotics, no evidence of benefit was found or reported on time to cure
- In some randomized controlled trials, treatment prolonged the excretion of organisms and was associated with the development of resistant organisms

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None declared

INTERVENTIONS

Empiric antibiotic treatment
Fluid replacement
Antimotility agents
Absorbent agents
Antisecretory agents
Bismuth subsalicylate

Definition

Diarrhea is defined as watery or liquid stools, usually with an increase in stool weight above 200 g per day and an increase in daily stool frequency.

Incidence/prevalence

An estimated 4 billion (4×10^9) cases of diarrhea occurred worldwide in 1996, resulting in 2.5 million deaths.[1] In developing countries, diarrhea is reported to cause more deaths in children younger than 5 years than any other condition.[1] In the United States, which has a low incidence, the estimated incidence of infectious intestinal disease is 0.44 episodes per person per year, or 1 episode per person every 2.3 years, resulting in about 1 consultation with a physician per person every 28 years.[2] The epidemiologic features of travelers' diarrhea (people who have crossed a national boundary) are not well known. The incidence is higher in travelers to developing countries but varies widely by location and season of travel.[3]

Etiology

The cause depends on geographic location, standards of food hygiene, sanitation, water supply, and season. The commonly identified causes of sporadic diarrhea in adults in developed countries include *Campylobacter, Salmonella,* and *Shigella* species; *Escherichia coli; Yersinia* species; protozoa; and viruses, but no pathogens are identified in more than half of patients. In returning travelers, about 80% of cases are caused by bacteria, such as enterotoxigenic *E coli*; *Salmonella, Shigella, Campylobacter,* and *Vibrio* species; enteroadherent *E coli*; and *Yersinia* and *Aeromonas* species.

Prognosis

Few studies have examined which factors predict poor outcome in adults. In developed countries, death from infectious diarrhea is rare, although serious complications causing admission to a hospital, such as severe dehydration and renal failure, sometimes occur. People older than 74 years and those in long-term care have an increased risk of death.[4]

Aims

To reduce the infectious period, length of illness, risk of dehydration, risk of transmission to others, and rates of severe illness and to prevent complications and death.

Outcomes

The time from the start of treatment to the last loose stool; the number of loose stools per day; relief of cramps, nausea, and vomiting; rate of hospital admission; incidence of

severe illness; duration of excretion of organisms; and presence of bacterial resistance.

Methods

We did a literature search for systematic reviews and relevant randomized controlled trials using the Cochrane Library, MEDLINE, and EMBASE (December 1999) and an appraisal of *Clinical Evidence* in June 1999. Trial quality was assessed on allocation concealment and inclusion of all randomly allocated participants. Trials were excluded if they did not meet epidemiologic quality criteria. Most trial participants had moderate to severe diarrhea, usually defined as acute diarrhea lasting less than a week; more than 3 loose stools in 24 hours or more than 2 in 8 hours; and symptoms of an enteric illness such as nausea, vomiting, and cramps.

QUESTION: How effective is empiric antibiotic treatment in patients with travelers' diarrhea?

OPTION: EMPIRIC ANTIBIOTIC TREATMENT

Empiric treatment with antibiotics shortened illness duration in adults with diarrhea acquired overseas. Treatment was associated in some people with a prolonged presence of bacterial pathogens in the stool and the development of resistant strains.

Benefits

We found no systematic review. Fifteen randomized controlled trials[5-19] were found (a total of 2,251 travelers) that compared the empiric use of 1 or more antibiotics versus placebo. Eight trials evaluated quinolones,[5-12] 2 evaluated the combination of trimethoprim and sulfamethoxazole (cotrimoxazole),[6,13-15] and 1 each evaluated trimethoprim,[14] aztreonam,[16] bicozamycin,[17] pivmecillinam,[18] and rifaximin.[19] Seven trials studied US students older than 18 years visiting Guadalajara, Mexico, during summer months. The other 8 were in different locations. Entry criteria varied among trials, and treatment duration ranged from a single dose to 5 days. All trials found a

Table 1 *Effects of empiric antibiotic treatment of travelers' diarrhea: results of placebo-controlled trials*

Drug and dosage	No. of participants	Mean duration of diarrhea from start of treatment: Placebo group	Mean duration of diarrhea from start of treatment: Intervention group	Difference between means (95% confidence interval)*
Ofloxacin, 300 mg bid for 3 d[9]	232	56 h	28 h	−28 h (−40.5 to −15.5 h)
Ofloxacin, 300 mg bid for 5 d[9]	232	56 h	39 h	−17 h (−31.2 to 2.8 h)
Ciprofloxacin, 500-mg single dose[11]	83	53.5 h	24.8 h	−28.7 h (−40.2 to −17.2 h)
Bicozamycin, 500 mg qid for 5 d[7]	148	63.7 h	28.2 h	−35.5 h (−48.1 to −22.9 h)
Norfloxacin, 400 mg bid for 5 d[5]	511	4 d†	3 d†	NA
Ciprofloxacin, 500 mg bid for 5 d[6]	181	81 h	29 h	−52 h
TMP-SMX, 160/800 mg bid for 5 d[6]	181	81 h	20 h	−61 h
Ciprofloxacin, 250 mg bid for 3 d[7]	15	60 h	26 h	−34 h
Norfloxacin, 400 mg bid for 3 d[8]	94	4.4 d	3.2 d	−1.2 d
Norfloxacin, 400 mg bid for 3 d[10]	106	3.3 d	1.2 d	−2.1 ds
TMP-SMX, 160/800 mg bid for 6 d[13]	110	92.8 h	29.2 h	−63.6 h
Trimethoprim, 200 mg bid for 5 d[13]	110	92.8 h	30.7 h	−62.1 h
TMP-SMX, 160/800 mg bid for 3 d[15]	134	59 h	24 h	−35 h
TMP-SMX, 310/1,600-mg single dose[15]	227	58 h	28 h	−30 h
TMP-SMX, 160/800 mg bid for 3 d[15]	227	58 h	36 h	−22 h
Aztreonam, 100 mg tid for 5 d[16]	191	84 h	44 h	−40 h

bid = twice a day; d = day; h = hour; qid = 4 times a day; TMP-SMX = trimethoprim and sulfamethoxazole; NA = not available; tid = 3 times a day.
*If available from published data.
†Median duration of posttreatment diarrhea.

reduced duration of diarrhea, ranging from 1 to 2.5 days, but confidence intervals were not available from published data in 7 of the trials (table 1). The largest trial, in which 70% of the 598 participants had a history of recent travel, reported a 1-day improvement in the median duration of diarrhea, from 4 to 3 days (no confidence intervals available).[5]

Harms

Adverse effects varied by agent, with incidence in the trials ranging from 1.7%[7] to 18%.[11] Common reported harms were gastrointestinal symptoms (cramps, nausea, anorexia), dermatologic symptoms (rash), and respiratory symptoms (cough, sore throat). In the largest trial,[5] people with salmonella infection treated with norfloxacin had significantly prolonged excretion of *Salmonella* species in stool compared with those given placebo (median time to clearance of *Salmonella* species from stool was 50 days in the group given norfloxacin compared with 23 days in the placebo group). In addition, 6 of 9 *Campylobacter* organisms isolated after treatment had developed resistance to norfloxacin. One small trial[7] reported that 4 of 8 participants treated with ciprofloxacin developed resistant organisms at 48 hours (difference from placebo group, 50%; 95% confidence interval, 15%-85%). One trial reported 3 cases of continued excretion of *Shigella* species in people treated with trimethoprim-sulfamethoxazole. The organisms in 2 of these became resistant to the drug. The participants were clinically well. Other trials did not find posttreatment resistance or did not report it.[8]

Comment

Studies were generally well conducted. All but 1[8] were double-blind. Participant blinding through the use of identical placebo was used and well described in 10 of the studies and probably adequate in the remaining 5, although not as clearly stated. However, only 1 study reported using an appropriate statistical method for analyzing time to event outcomes.[15] Several trials reported surrogate end points, such as change in fecal consistency,[19] rather than the primary outcome of interest.[12,18,19]

QUESTION: How effective is empiric antibiotic treatment of those with community-acquired diarrhea?

OPTION: EMPIRIC ANTIBIOTIC TREATMENT

In randomized controlled trials, the use of ciprofloxacin reduces the duration of diarrhea developed in the community by 1 or 2 days. Trials of other empiric treatments with antibiotics either found no effect or did not report data on time to cure.

Benefits

We found no systematic review. We found 9 randomized controlled trials in 8 reports[20-27] (1,760 participants)

Table 2 *Effects of empiric antibiotic treatment of community-acquired diarrhea: results of placebo-controlled trials*

Drug and dosage	No. of participants	Mean duration of diarrhea from start of treatment: Placebo group	Mean duration of diarrhea from start of treatment: Intervention group	Difference between means (95% confidence interval)*
Lomefloxacin, 400 mg/d for 5 d[23]	84	3.2 d	4.4 d	1.2 d (0.1 to 2.5 d)
Ofloxacin, 400-mg single dose[26]	117	3.4 d	2.5 d	−0.9 d (−1.8 to 0.0 d)
TMP-SMX, 800/160 mg bid for 3 d[21]	287	30.2 h	24.4 h	−5.8 h
Cloquinol, 250 mg tid for 3 d[21]	287	30.2 h	25.5 h	−4.7 h
Enoxacin, 400 mg bid for 5 d[21]	137	44.9 h	38.9 h	−6 h
TMP-SMX, 160/800 mg bid for 5 d[21]	137	44.9 h	42.3 h	−2.6 h
Ciprofloxacin, 500 mg bid for 5 d[24]	162	2.9 d	1.5 d	1.4 d
Ciprofloxacin, 500 mg bid for 5 d[25]	173	3.4 d	2.4 d	1 d
TMP-SMX, 160/800 mg bid for 5 d[25]	173	3.4 d	NA	NA
Ciprofloxacin, 500 mg bid for 5 d[27]	85	4.6 d	2.2 d	−2.4 d

d = day; TMP-SMX = trimethoprim and sulfamethoxazole; bid = twice a day; h = hour; tid = 3 times a day; NA = not available.
*If available from published data.

comparing the use of 1 or more antibiotics with placebo (table 2). Trials were conducted at 12 sites in 11 countries. Four trials were conducted in developed countries, and the others took place in developing countries. The largest study, a multicenter trial of fleroxacin, included 332 adult inpatients.[20] Eight trials evaluated quinolones,[20-27] 4 evaluated trimethoprim-sulfamethoxazole,[21,22,25] and 1 evaluated cloquinol.[21] Entry criteria varied between trials, and treatment duration ranged from a single dose to 5 days. In 3 trials, antibiotics reduced illness duration[24,27] or decreased the number of liquid stools by 48 hours,[20] whereas in 5, illness duration was not reduced.[21-23,26] In 1 trial, the illness duration after ciprofloxacin was reduced but not after trimethoprim-sulfamethoxazole.[25]

Harms

Adverse effects varied by agent. In 1 trial of lomefloxacin, 33% of treated participants reported adverse effects compared with 2.7% in the placebo group (absolute risk increase, 31%; 95% confidence interval, 17%-46%). Two were withdrawn from the trial after developing anaphylactoid reactions.[23] In the same trial, 18% of treated participants developed organisms resistant to lomefloxacin.[23] In the multicenter trial of ciprofloxacin and trimethoprim-sulfamethoxazole, 5 people with *Campylobacter* species isolated from stool (2 treated with ciprofloxacin, and 3 treated with trimethoprim-sulfamethoxazole) developed organisms resistant to respective agents.[25] In the largest trial, 3 deaths occurred, 2 people treated with fleroxacin and 1 person who received placebo. Two of the deaths occurred from hypovolemic shock (1 with fleroxacin, and 1 with placebo).[20]

Comment

The main pathogenic organisms found in each study varied, which may partly explain variations in effect. Reported outcomes varied between trials, precluding direct comparisons or a summary of treatment effect on the basis of published reports.

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Curbside Consult

At what age should a child begin regular continuous exercise at moderate or high intensity?

The question of when youth competition and training should start is not new and is much debated. Unfortunately, there cannot be a straightforward answer, because between members of the same sex, given the same chronologic age, there is considerable variation in growth and development. Early maturing children are biologically advanced for their chronologic age. Therefore, the use of chronologic age to ascertain physical potential may cause significant problems by not taking into account biologic age. This situation is particularly true during puberty, when differences that are related to maturity in strength, flexibility, speed, endurance, and power become more evident among children of the same chronologic age.

We encountered children who were already training between 14 and 18 hours per week at age 14 to compete at high levels

Sports competition and training often begin as early as age 6. The number of children taking part in organized competitive sport increases linearly from this age, with a maximum between 11 and 13 years of age. Although efforts should be made to concentrate on encouraging children to participate instead of competing, most parents encourage the competitive aspects of the sport being played. With this focus comes the emphasis on training. It is not clear what constitutes intensive training. In our study, the Training of Young Athletes, we encountered children who were already training between 14 and 18 hours per week at age 14 to compete at high levels in gymnastics, football, running, and tennis. Anecdotal reports from the former Eastern block countries would suggest, however, that children of that age were training at least 50% more than the children recruited in our study. Findings from more recent studies in the United States suggest that an average of 18 hours of intensive training per week is the norm in this age group.

Natural multiactivity propensity of all children for games and play is channeled too early to a single sport

The dangers of high level training and competition at a young age are twofold. Children and adolescents are not miniature adults. At any given chronologic age, children differ not only in their biologic age and physical maturity but also in their psychological attitude. Psychological factors are important when determining children's readiness for sport, their degree of sports involvement, and their enjoyment. Also, by taking part in high level sport at a young age, it has been argued that children may fail to develop necessary everyday social skills.

The dangers of intensive training in young athletes are represented by the musculoskeletal injuries from which these athletes may suffer. There is no doubt that acute and overuse injuries can be a serious problem in this age group. We have found that young athletes who were able to compete and train at a high level are a naturally gifted group whose musculoskeletal system is intrinsically well endowed. These athletes had a low rate of injury. Young athletes at the subelite level, however, who train intensively to reach the elite standard, may not be so fortunate. These children may suffer serious injuries that cause them to abandon their sport and experience significant problems in everyday life.

Regular physical activity should be part of everyday life for all children. Unfortunately, natural multiactivity propensity of all children for games and play is channeled too early to a single sport. To safeguard young athletes and to avoid burnout, children should start and practice several sports at an early age. They may then focus, possibly starting to train intensively, on one or two sports in which they especially excel only in the more advanced phases of puberty (Tanner stages 4 and 5).

Acute and overuse injuries can be a serious problem

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capsule

High fat diet may reduce seizure rate The ketogenic diet, popular between World War I and World War II as a treatment for refractory epilepsy in children, has come back into vogue over the past decade. There's plenty of anecdotal evidence that a diet made up of 90% fat reduces seizure rates; it is reviewed by 2 doctors from Chicago, who conclude that the ketogenic diet probably works (www.pediatrics.org/cgi/content/full/105/4/e46). It's hard to say whether it works better than established alternatives, however—controlled trials were never done.

Medical Myths

Measuring white blood cells in the stools is useful in the management of acute diarrhea

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It is routine clinical practice, endorsed by the American College of Gastroenterology,[1] that the fecal white blood cell count should be used to determine if an acute episode of diarrhea is invasive. This test is also used to direct further investigations and therapy. This practice assumes that the fecal white blood cell count predicts that the stool culture will be positive for invasive disease and will, therefore, predict the patient's response to antimicrobial therapy. The results of multiple studies note that this is a poor test on both counts. The use of this test dates to the beginning of this century, when clinicians noted that patients with bacillary dysentery were much more likely to have white blood cells in their stool specimens than patients with amebic dysentery. Only the presence of *Shigella* species and *Entamoeba histolytica* were reported in these historic works.[2]

In a systematic review and meta-analysis of the literature from 1970 to 1994, Huicho et al[3] determined the accuracy of stool white blood cell counts for predicting the results of stool cultures. Only studies with enough information to determine sensitivity and specificity of the test were included in the meta-analysis. Using a receiver operating characteristic curve, a peak sensitivity of 70% for the test was noted, but the specificity was just 50%. Using a cutoff to maximize specificity (90%) resulted in a sensitivity of about 40%. The test depends heavily on the time taken for the specimen to be examined after it has been retrieved and also on the experience of the operator. Increasing time results in increasing cell lysis and decreased sensitivity.

The test depends heavily on the time taken for the specimen to be examined after it has been retrieved and also on the experience of the operator

The use of fecal white blood cell counts to predict the results of the stool culture is at best a secondary consideration. The most important question is, "Does the test result predict response to antimicrobial therapy?" Several articles have noted that neither the results of stool culture nor the fecal white blood cell count predict the response to therapy for either domestic[4,5] or imported diarrhea.[6] Because the presence of white blood cells in stool specimens is a poor predictor of culture and response to therapy, its routine use should be abandoned in favor of a more cost-effective and rational clinical algorithm.

The presence of white blood cells in stool specimens is a poor predictor of culture and response to therapy

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Vietnamese family relationships

A lesson in cross-cultural care

Information about cultural patterns presented in this article and others in this series represents generalizations, which should not be mistaken for stereotypes. Cultural generalizations will not fit every patient, but awareness of broad patterns can give practitioners a starting point from which to provide appropriate care. The information on Vietnamese family relationships in this essay are taken from S Farrale's chapter in *Culture and Nursing Care: A Pocket Guide,* edited by J G Lipson, S L Dibble, and P A Minarek.

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Tran Nyguen, a 65-year old Vietnamese woman, had just been discharged from the hospital and was receiving home health care for lung cancer and tubercular cavitary lesions in her lungs. She was living in a small apartment with 8 members of her extended family, all of whom had arrived in the United States 2 years earlier. Mrs Nyguen did not speak English, so her teenaged granddaughter was enlisted as interpreter. That this was a problem became clear when Martha, the home health nurse, observed that both the patient and the granddaughter would look at the 80-year-old uncle before speaking. Vietnamese culture is both hierarchic and male dominated; the uncle was the patriarch of the family and, thus, responsible for any decision making. Martha cleverly resolved the problem by having the granddaughter tell the uncle what the nurse was saying, and then the uncle passed the information on to the patient. When the patient responded, she spoke directly to the uncle, who passed the information on to the granddaughter, who then translated for the nurse. Although this translation technique was cumbersome, it upheld the traditional hierarchic structure in the family.[1]

In another case, a hospice worker discovered that the grandson acting as interpreter for an elderly Vietnamese man was neglecting to pass her instructions on to the patient after she left. By leaving, she left the grandson in the intolerable position of having to tell his grandfather what to do, something not allowed in the traditional hierarchic structure. The hospice worker should have remained in the room so the instructions would have been clearly seen as coming from her. Using an older authority figure, as in the case above, would have been even better.

FAMILY COMPOSITION OR STRUCTURE

Vietnamese are highly family oriented, and a family may be extended or nuclear.[2] Sometimes 2 or 3 generations reside in 1 household. They may not be tolerant or supportive of gay or lesbian siblings; first-generation immigrants are more supportive than the second generation. Acculturation causes a shift from extended families to a nuclear family system, and decision making may be confined to a spousal couple because they no longer have the duty to seek advice and consent from parental families.

DECISION MAKING AND SPOKESPERSONS

The father or eldest son is the family spokesperson. Wives who are not wage earners demonstrate more subordinate patterns of decision making. Women tend to continue the attitude that husbands have the legitimate right to make final decisions and usually will withdraw from spousal conflict to maintain harmony in the family.

GENDER ISSUES

Men are decision makers and support the family. Their job is to carry out heavy-duty chores and to be strong in times of crisis. Women prepare all meals, whether or not they are employed outside the home. Women do most of the household chores unless children are old enough to help. When women get jobs more easily than men, however, traditional roles and family relationships are strained.

CARING ROLE

Women in the family are responsible for caring for an ill patient. Women act as primary providers at the bedside, regardless of the patient's sex. They are expected to pamper the patient with a daily bath and meals.

EXPECTATIONS OF AND FOR CHILDREN

When children are young, parents look after them, and when parents get old, children look after them. Children are well sheltered by their parents. They are expected to obey and honor parents and respect elders, and they are taught to be honest, quiet, and polite.

STRONG EMPHASIS ON EDUCATION

Parents push their children to the highest level in education, especially parents who did not have the opportunity themselves. Some intergenerational conflicts occur with children who are acculturating to American norms or when a child must serve as spokesperson or interpreter.

EXPECTATIONS OF AND FOR ELDERS

Elders stay with the family for support and comfort. They are highly respected by all age groups. Depending on their socioeconomic status and lifestyle, elders are expected to prepare meals and take care of grandchildren while wife and husband work.

EXPECTATIONS OF ADULTS IN CARING FOR CHILDREN AND ELDERS

Adults are expected to assume full responsibility for a sick family member at home. Traditionally, sick elders are cared for at home, unless circumstances make it necessary to place them in a nursing home. Institutionalizing an elderly relative is believed to be disrespectful to them.

EXPECTATION OF VISITORS

As mentioned earlier, a female family member is expected to stay at the bedside of a hospitalized patient for comfort and support. A private room is recommended. Because Vietnamese are family-centered, hospitalized patients will have visits from many family members and friends.

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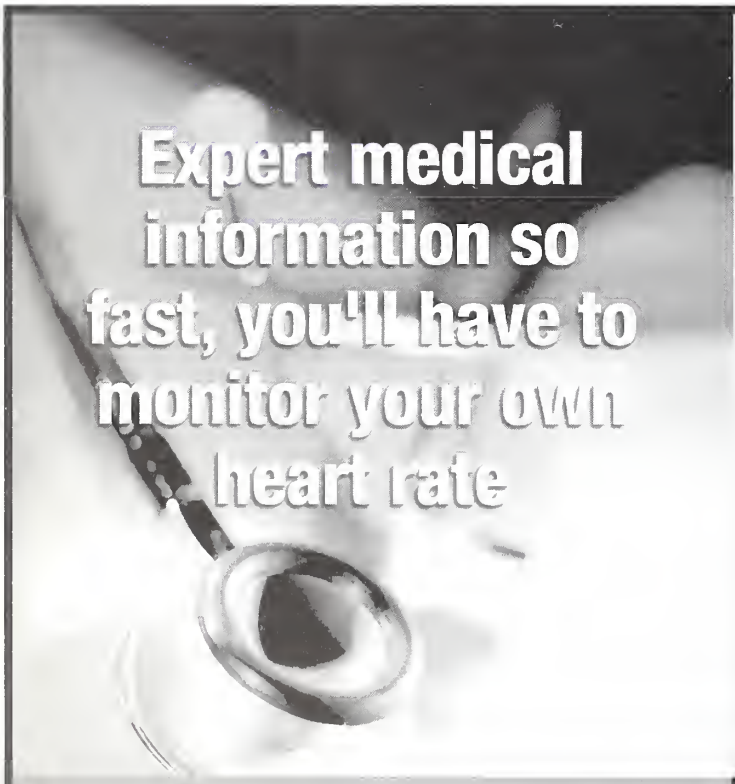

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West of the Rockies

Letter from northern California

Mission to Mindanao

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The air in the plane became warmer and more humid as we continued our southbound descent into Butuan City. The regional airport flirted from behind miles of coconut groves, showing itself as a single strip of concrete. Passengers and cargo were transferred to 2 buses and several large trucks, but it took a 3-hour bus ride before the 115 members of our medical team arrived at Surigao del Norte Province.

Surigao City, the provincial capital and site of this year's mission, watches over the Mindanao Sea from the extreme northern tip of Mindanao Island. This large, southern island of the Philippines lies closer to the equator than the other islands and is arguably the most tropical island in the nation.

Children were curious to see the American doctors who came to provide care

Our mission group, the Philippine Medical Society of Northern California, is a nonprofit organization of volunteer physicians, nurses, and medical and premedical students. Every January, we fly from the San Francisco Bay Area to a preselected site. Although this is only the second year I have taken part, the mission has occurred annually for the past decade.

We are petitioned by many provincial governments, but our selection criteria are straightforward, and we choose the poorest site that is capable of supporting our medical team. All team members donate vacation time and pay for their own travel and lodging expenses. We bring surgical equipment and donated medicines and sometimes leave expendable equipment for the use of local physicians. The local governments usually support our mission by providing local transportation, security, and most meals.

In Surigao, our team was given headquarters near the city center at the Caraga Regional Hospital, a white 2-story building about the size of a rural post office. Upon our arrival, we had to push through a crowd that had started gathering a day earlier because local radio stations had broadcast our visit.

The faces were many and varied—some merely curious to see what American doctors looked like, but others appeared more desperate. Mothers held sick infants; children supported weak parents—all oblivious to the rain, and all hoping to be noticed.

Unlike most of the physicians and nurses, who were emotionally prepared by previous missions, the magnitude of the people's plight brought some students to tears. While the crowd wondered, "When do they start?" our team grappled with "Where do we begin?"

By the end of the day, we had taken over the hospital through the sheer number of our physicians and the availability of subspecialists. Our surgeons assumed control of the op-

erating and recovery rooms, and the medical team created an outdoor primary care clinic.

Patients and family frequently shared a single bed, and the hallways were lined with those awaiting care. Basic x-ray and laboratory tests could be obtained, but any service beyond that was a pleasant surprise. The local nursing staff was so extended that assistance from family members was routine and expected.

Mothers held sick infants; children supported weak parents—all oblivious to the rain, and all hoping to be noticed

The intensive care unit had only 2 beds. Supplemental oxygen was available, but ventilators were not. For those in respiratory failure, the family took turns hand-squeezing an air bag—often for days on end. This was not a place where the critically ill were likely to survive.

Each day, patients lined the hallways awaiting care

Once the mission had started, each day became a dawn-to-dusk affair. The bulk of our mission team consisted of surgeons and operating room nurses, and they clearly had the most visible impact.

Teams of otolaryngologists and plastic surgeons operated on dozens of infants with cleft lips and palates. Ophthalmologists removed cataracts nearly round-the-clock, returning sight to hundreds. Orthopedic surgeons did what they could to improve the use of malformed or poorly healed limbs. Other surgeons operated on dozens of patients with huge goiters, underscoring the irony that an island nation could be so iodine-deficient.

At the outdoor medical clinic, internists, family physicians, dentists, and pediatricians struggled with the multitude. For some, our physicians might be the only health care professionals they would ever see. Many people presented late in the course of their disease, and what would have been curable, if caught early in the United States, was here untreatable. The lack of modern radiology and laboratory departments restricted us from practicing optimal medicine, but we were usually able to take a good guess at the disease and provide the most likely therapy. For those merely curious, we handed out multivitamins to justify their long trek to the clinic.

For some, our physicians might be the only health care professionals they would ever see

At the start of a mission, I fool myself into believing that I am prepared for the severe level of suffering I will see. Afterward, I find myself recounting too many cases that have astonished me. Perhaps most numbing is the extreme stoicism with which even the harshest diagnosis is accepted—a "whatever-God-wills" attitude reflecting a lifetime of both devotion and deprivation.

Despite the volume, many individual faces are unforgettable: The young girl with elephantiasis whose leg outweighed the rest of her body. The young mother with a cleft lip who insisted that her infant, who also had a cleft lip, be treated first. The ecstatic grandmother who no longer had to be led around after a cataract was removed.

The magnitude of the people's plight brought some students to tears

Often I would see some horrific, exotic disease, and I would be torn between the desire to take a photograph and hesitation. Ultimately, I refrained from the picture taking because I realized that the patient had been stared at enough.

We continued the mission until our supply of useful medicine had been exhausted. On the last day, the waiting line was almost as long as on the first, and the new challenge became to send people away. We had treated almost 9,000 patients, a new record, but that number was meaningless to those remaining. Despite their hopes that we would return someday soon, we knew that next year we would be going somewhere else.

A month later, I was sitting at a computer terminal. It was a pristine, snowy-white day in New England, and I was sitting in a comfortable chair on a newly constructed medical ward in a well-heated hospital within a large, well-equipped medical center. I was drinking a cup of fresh coffee and complaining to myself about how slow the computer was working that day. I caught myself mid-sentence when I shamefully realized that I had nothing to complain about.

The Philippine Medical Society of Northern California may be contacted at; Medical Missions Office, 3321 Clearview Terrace, Fremont, CA 94539. Dr Angelo Ozoa and Mr Brad Freitag provided valuable assistance in the preparation of this manuscript.

Speaker's Corner

Sensing a purpose

The baby was dead, they all knew it. The cardiopulmonary resuscitation wasn't helping, nor was the frenzied presentation by the medics who had rushed her into the emergency department (ED). A 2-month-old, previously healthy, was found apneic and pulseless in her crib. Probably another case of sudden infant death syndrome.

"Should we stop?" someone asked.

The senior resident brought his face close to the infant's. Her lips were like marble, her dark skin mauve. Behind slightly parted eyelids, her eyes seemed plastic.

"No," he said. "Full code."

The senior resident shuffled through the night and left the hospital the next morning, badly in need of sleep and a sense of purpose

No one debated the decision, not the nurses, not the intern and junior resident, and not the attending pediatrician standing quietly at the foot of the bed. The baby was intubated, a femoral catheter was inserted, and chest compressions were continued until 2 doses of epinephrine had restarted her heart. The cardiac tracing, at first, was slow. After a push of sodium bicarbonate and an infusion of dopamine, the heart rate barely topped 100 beats per minute. The senior resident made arrangements for the baby's transfer to the hospital's intensive care unit (ICU).

"I'm sorry," he told the resident working in the ICU. "I think I saved a tragedy."

He watched the ICU team roll the gurney holding the baby through the ED's double doors and the parents, trying to touch their limp child through a network of wires, tubes, and professional hands. Swallowing a wave of nausea, he wished that someone had challenged him when he announced the decision to continue to resuscitate.

Why hadn't he let her be? he thought. There were more patients to examine, 10 more hours of a weekend shift to complete. The senior resident shuffled through the night and left the hospital the next morning, badly in need of sleep and a sense of purpose.

It was Sunday. The sky was overcast. He was cited on his trip home for driving the wrong way down a 1-way street.

Sunday hung eternal. He felt hollow, was unable to rest, to go out, or to do anything except picture a 2-month-old baby lying lifeless on a starched white sheet. In the past, he had privately scorned physicians who flogged dead patients with technology rather than permitting them peace. Was he no different?

He considered what he knew: rigor and dependent lividity were 2 reliable signs of death. Had the baby's body been stiff? He wasn't sure. Had there been dependent blood pooling? He had not checked. To his horror, he couldn't remember touching the baby before deciding to resuscitate; he had simply bent himself close, thought he saw something move behind her eyes' milky fog, and said go instead of stop. He had felt for her pulse, yes, but only as an afterthought, only as a matter of medical routine. Objectivity had not influenced his order to resuscitate. He had acted instead on instinct.

Something other than judgment accounted for what happened when his face had been close to the baby's

Monday morning, and senior resident rounds came upon him heavily. He had not called the ICU and, by the time all the senior residents sat together for case review, had not asked for an update on the baby's status. Weekend admissions were presented and discussed; he sat quietly, feigning distraction by the new ward service he had assumed 3 hours earlier. Everyone around him seemed confident and competent.

The resident who had been working in the ICU on Saturday cleared his throat. "I have a case that's kind of interesting," he smiled. The senior resident paled. He listened in horror while the baby's ED arrival and resuscitation were detailed, wondering how someone who was supposed to be a colleague could so easily humiliate him.

The presenting resident looked at him and paused. "I can't understand why you resuscitated her."

The senior resident shook his head. He opened his palms with a gesture of resignation. No one spoke.

"Well," the other resident continued. "The parents are sure glad you did. The baby was extubated last night and is taking a bottle again this morning. She looks like a completely normal little girl."

After the room had emptied—after fellow residents had decided the baby must have had hypothermia and congratulated him for trusting something they called clinical judgment—the senior resident sat alone. Something other than judgment accounted for what happened when his face had been close to the baby's. He had sensed that a life had not ended. And he had responded.

The sun warmed the table as he mindlessly fingered a packet of new patient summaries. The day, he noticed, was clear.

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- Basic Bariatric Course, October 3, 2000
- Practice Productivity Course, October 4, 2000
- 50th Anniversary Annual Obesity and Associated Conditions Symposium, October 5-7, 2000

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"Family Medicine Update: 2000"
Hotel Del Coronado • Coronado, California
July 7-9, 2000

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Continuing Medical Education

ARIZONA ● CALIFORNIA, HAWAII, NEVADA ● COLORADO ● IDAHO ● NEW MEXICO ● UTAH ● WASHINGTON ● WYOMING

ARIZONA

All courses listed have been certified as meeting the criteria for Cat 1 of the ArMA CME Certificate and the AMA Physicians Recognition Award. To list Cat 1 CME programs, please send information to Arizona Medical Association, 810 West Bethany Home Road, Phoenix, AZ 85013; or phone (602) 246-8901.

OCTOBER 27-29, 2000: Clinical Endocrinology for Primary Care Physicians. Medical Education Resources at The Phoenician, Scottsdale, AZ. 11 hrs Cat 1. Contact MER (800) 421-3756; Fax (303) 798-5731; www.mer.org.

CALIFORNIA, HAWAII, AND NEVADA

All courses and meetings listed are approved for Cat 1 credit toward the CMA Certificate in CME. To list accredited courses here, please send information at least two months in advance to Paulette Richardson, Continuing Medical Education, California Medical Association, PO Box 7690, San Francisco 94120-7690; or phone (415) 882-3387. For more information on accreditation or certification, please write to the above address.

ALLERGY/IMMUNOLOGY

AUGUST 11-13, 2000: A Midsummer Night's Wheeze. American College of Allergy, Asthma and Immunology at La Costa Resort and Spa, Carlsbad, CA. Contact: (858) 459-0681; fmellon@smallworldtravel.com.

CARDIOLOGY

JUNE 16-18, 2000: Coronary Heart Disease Update. Parc Fifty Five, San Francisco, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

JULY 23-26, 2000: 20th Annual Current Concepts in Primary Care Cardiology. UC Davis Health System at Northstar at Tahoe, Truckee, CA. 19 hrs Cat 1. Contact Office of CME (916) 734-5390; Fax (916) 734-8966; http://web.ucdmc.ucdavis.edu/edu.

AUGUST 17-19, 2000: Critical Care Cardiology. UCSF and American College of Cardiology at Grand Hyatt Hotel, SF. 16.5 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme.

EMERGENCY MEDICINE

JUNE 1-2, 2000: Improving Emergency Department Patient Satisfaction and Reducing Length of Stay. Center for Emergency Medical Education at Harrah's, Las Vegas, NV. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

AUGUST 21-24, 2000: National Emergency Medicine Board Review. Center for Emergency Medical Education at Harrah's, Las Vegas, NV. Contact CEME, (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

SEPTEMBER 17-20, 2000: National Emergency Medicine Board Review. Center for Emergency Medical Education at Hyatt Regency on Capitol Hill, Washington, DC. Contact CEME, 53 (800) 651-CEME (2362) or (916) 864-4830; Fax (916) 864-4839; www.ceme.org.

ENDOCRINOLOGY & METABOLISM

JUNE 21-24, 2000: The Endocrine Society's 82nd Annual Meeting: Endo 2000 Toronto. The Endocrine Society at Toronto, Ontario, Canada. 37 hrs Cat 1. Contact the Endocrine Society (202) 347-6659 or (888) 695-5481; Fax (888) 695-5498 or (202) 347-6674; ENDO@Laserreg.com, www.endo-society.org/scimtgs/scipub.htm.

FAMILY PRACTICE/PRIMARY CARE

JUNE 11-16, 2000: 24th Annual Fingers to the Toes Primary Care Orthopaedics. UC Davis Health System at Stanford Sierra Camp, Fallen Leaf Lake, South Lake Tahoe, CA. 28.5 hrs Cat 1. Contact Office of CME (916) 734 5390: Fax (916) 734-8966.

JULY 2-7, 2000: Essentials of Women's Health: An Integrated Approach to Primary Care & Office Gynecology. UCSF at Hapuna Prince Hotel, Big Island, HI. 24 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme.

JULY 7-9, 2000: San Diego Academy of Family Physicians' 44th Annual Postgraduate Symposium: Family Medicine Update 2000. SDAFP at Hotel del Coronado, San Diego, CA. Contact Terry Camarata (619) 422-1186; Fax (619) 476-1536.

JULY 8-9, 2000: 4th Annual Primary Care Pediatric Orthopedics. Valley Children's Hospital at Doubletree Hotel, Monterey, CA. 8 hrs Cat 1. Contact William Hennrikus (559) 353-5944.

JULY 10-13, 2000: Family Practice Board Review Course. UCSF at Fairmont Hotel, San Francisco, CA. 25 hrs Cat 1. Contact Julia K. Engleton, (415) 476-5250.

AUGUST 10-12, 2000: LGBT Youth and Families: The Foundations of a Healthy Future—GLMA 18th Annual Conference. Gay and Lesbian Medical Association at Vancouver, B.C., Canada. 15 hrs Cat 1. Contact JPD Communications (510) 843-8048 or GLMA www.glma.org; info@glma.org.

AUGUST 13-18, 2000: Essentials of Primary Care: A Core Curriculum for Practice in the Managed Care Era. UCSF at Squaw Creek, CA. 25 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine, ucsf.edu; medicine.ucsf.edu/programs/cme.

OCTOBER 8-12, 2000: Nevada Academy of Family Physicians 12th Annual CME/Golf Meeting. Nevada Academy of Family Physicians at The Rio Suite Hotel & Casino. Contact Barbara Bolling (702) 228-5822; Fax (702) 228-9737; nafplvbb@aol.com.

NOTICE

State Associations should send their CME listings for publication to:

Catherine Nancarrow, Editorial Manager
wjm - western journal of medicine
P.O. Box 7690
San Francisco, CA 94120-7690

(415) 974-5977 · Fax (415) 822-3379
wjm@ewjm.com

CME listings can also be found on our website at www.ewjm.com/misc/CMEads.shtml

OB/GYN

JUNE 20-24, 2000: Lactation Educator Training Program. UCLA Extension and Memorial Medical Center at Springfield, IL. Contact UCLA Extension (310) 825-8423; www.uclaextension.org/healthsci/lactate.htm.

JULY 20-22, 2000: The 28th Annual Seminar for Physicians on Breastfeeding. La Leche League International at Hilton Head Ocean Front Resort, Hilton Head Island, SC. Contact: Carol Kolar (847) 519-7730; Fax (847) 519-0035; ckolar@llli.org.

SURGERY

JUNE 14-17, 2000: 16th Annual San Diego Shoulder Arthroscopy/Arthroplasty Course. AAOS at Hyatt Regency, La Jolla, CA. Contact Rebecca Quiring (760) 940-2066.

JULY 28-30, 2000: Comprehensive Review Course in Hand Surgery 2000. American Society for Surgery of the Hand at Dallas, TX. 25 hrs Cat 1. Contact ASSH (847) 384-8300, Fax (847) 384-1435; Meetings@hand-surg.org.

SEPTEMBER 22-24, 2000: What's New In General Surgery—22nd Annual Postgraduate Course. UC Davis at Resort at Squaw Creek, Olympic Valley, CA. 13 hrs Cat 1. Contact CME UC Davis, (916) 734-5390; Fax (916) 734-8966; web.ucdmc.ucdavis.edu/edu.

GENERAL/MULTIDISCIPLINARY

JUNE 9-11, 2000: Issues in Women's Health. Medical Education Resources at Treasure Island, Las Vegas, NV. 11 hrs Cat 1. Contact MER (800) 421-3756; Fax (303) 798-5731; www.mer.org.

JUNE 10, 2000: Cannabis Therapy: Science, Medicine, and the Law. At UC San Francisco, Laurel Heights campus, San Francisco, CA. 7 hrs Cat 1. Contact USCF (415) 476-5257.

JUNE 12-16, 2000: Advances in Internal Medicine. UCSF at UCSF Parnassus Campus, Cole Hall. 33.5 hrs Cat 1. Contact Cliff Brock (415) 476-5208; cme@medicine.ucsf.edu; medicine.ucsf.edu/programs/cme.

JUNE 16-18, 2000: Current Concepts in Child Neurology. Children's Hospital and Health Center, San Diego at San Diego Hilton Beach and Tennis Resort, Mission Bay, San Diego, CA. 15 hrs Cat 1. Contact CME Office (619) 576-4072 or (888) 892-9249; cme@chsd.org.

JUNE 18-22, 2000: Recent Advances in Venous Thrombosis, Pulmonary Embolism and Anticoagulation Therapy: From A to V Lelden. UC Davis at The Mauna Lani Bay Hotel, Kohala Coast, HI. 18 hrs Cat 1. Contact CME UC Davis (916) 734-5390; Fax (916) 734-0188.

JUNE 28, 2000: Pain Management: New Attitudes, New Strategies. California Medical Association Foundation and California Medical Association at Santa Clara County Medical Association, San Jose, CA. 4 hrs Cat 1. Contact Rebecca Esty (916) 444-5532; resty@calmed.org.

JULY 9-18, 2000: World Alzheimer Congress 2000: With Change in Mind: Pivotal Research and Creative Care. Alzheimer's Association, Alzheimer's Disease International and Alzheimer Society of Canada in Washington, DC. Contact (312) 335-5813; Fax (312) 335-1110; alzheimer2000@alz.org; www.alzheimer2000.org.

JULY 14-17, 2000: Spanish for the Medical Profession. Maricopa Integrated Health System and Rios Associates at Glendale Adventist Medical Center, Los Angeles, CA. 36 hrs Cat 1. Contact Rios Associates (520) 907-3318 or (619) 218-4875.

JULY 21-23, 2000: Dermatology for the Non-Dermatologist. Tenaya Lodge, Yosemite, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

AUGUST 4-6, 2000: Clinical Endocrinology for Primary Care Physicians. Monterey Plaza, Monterey, CA. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

AUGUST 4-7, 2000: Spanish for the Medical Profession. Maricopa Integrated Health System and Rios Associates at Hotel Atherton, San Francisco, CA. 36 hrs Cat 1. Contact Rios Associates (520) 907-3318 or (619) 218-4875.

AUGUST 13-23, 2000: USC 42nd Annual Postgraduate Refresher Course. Part 1 (13th-19th): USC at Hyatt Regency Hotel, Maui, HI. 28 hrs Cat 1. Part 2 (20th-23rd): Hapuna Prince Beach Hotel, Big Island of Hawaii. 10 hrs Cat 1. Contact USC School of Medicine, (323) 442-2555 or (800) USC-1119; Fax (888) 665-8650 or (323) 442-2152; usccme@hsc.usc.edu.

AUGUST 18-19, 2000: Controversies in Women's Health. UCLA at Disneyland Hotel, Anaheim, CA. 12 hrs Cat 1. Contact Catarina Prata (310) 312-0518.

SEPTEMBER 14-16, 2000: Rheumatology Board Review. UCSF at Radisson Miyako Hotel, San Francisco, CA. 20 hrs Cat 1. Contact Office of CME (415) 476-5208.

SEPTEMBER 28-OCTOBER 1, 2000: Clinical Endocrinology for Primary Care Physicians. Medical Education Resources at Monte Carlo, Las Vegas, NV. 11 hrs Cat 1. Contact MER (800) 421-3756; Fax (303) 798-5731; www.mer.org.

COLORADO

To list CME programs here, please send information at least two months in advance to: Mr Robert L. Kennedy, Denver Medical Society, 1850 Williams Street, Denver, CO 80218; or telephone (303) 377-1850. Brochures, course information, and registration forms are available from the contact person or organization.

JUNE 25-JULY 1, 2000: 46th Family Practice Review. YMCA of the Rockies, Estes Park, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 9-12, 2000: 6th Biennial Management of Type I Diabetes. Marriott's Vail Mountain Resort, Vail, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 9-14, 2000: 36th Internal Medicine Program. YMCA of the Rockies, Estes Park, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 21-23, 2000: Genetics and Ethics. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 24-28, 2000: 27th Renal Disease Program. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

JULY 28-30, 2000: Neurology for the Non-Neurologist. Sheraton Tamarron Resott, Durango, CO. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

JULY 28-31, 2000: A Comprehensive Review of Movement Disorders for the Clinical Practitioner, 10th Annual Course. Columbian University College of Physicians and Surgeons at Hotel Jerome, Aspen, CO. Contact Columbia University College of Physicians and Surgeons, (212) 781-5990; Fax (212) 781-6047; cme@columbia.edu; http://cpmcnet.columbia.edu/dept.cme.

AUGUST 2-4, 2000: 26th Psychiatry Conference. Given Institute, Aspen, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

AUGUST 6-13, 2000: Current Concepts in Adult Orthopedic Surgery. The Peaks, Telluride, CO. Contact University of Colorado School of Medicine, Office of Continuing Medical Education, (800) 882-9153 or (303) 372-9050; Fax (303) 372-9065.

NEW MEXICO

Information, requests for accreditation, and items to be listed should be sent to the chair of the CME Committee, New Mexico Medical Society, 7770 Jefferson, Suite 400, Albuquerque, NM 87109, at least two months in advance. For information on CME accreditation or on the CME requirements of the New Mexico Board of Medical Examiners, please write to the above address or call (505) 828-0237.

JUNE 28-30, 2000: Santa Fe Summer Psychiatric Symposium. Hotel Loretto, Santa Fe, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

AUGUST 2-4, 2000: Current Concepts in General Surgery. Hilton Hotel, Albuquerque, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

AUGUST 19, 2000: New Mexico Hispanic Medical Association Annual Meeting. Albuquerque, NM. Contact Kelly Little (505) 828-0237.

OCTOBER 5-7, 2000: Neurology Update. Hilton Hotel, Albuquerque, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

OCTOBER 15-20, 2000: Update and Review of Internal Medicine. La Fonda Hotel, Santa Fe, NM. Contact UNM Continuing Medical Education, (505) 272-3942.

WASHINGTON

The listing of continuing medical education programs in Washington state is compiled by the Washington State Medical Association. To list Cat 1 programs here, please send information at least two months in advance to Continuing Medical Education, Washington State Medical Association, 2033 Sixth Avenue, Suite 1100, Seattle, WA 98121; or phone (206) 441-9762 or (800) 552-0612.

JUNE 2000: Northwest Wilderness Medicine. Seattle, WA. Contact University of Washington, (206) 543-1050; cme@u.washington.edu.

JULY 23-25, 2000: World Class Breast Imaging: Mammography for a New Millennium. Waterfront Centre Hotel. Vancouver, BC. Contact Medical Education Resources (800) 421-3756.

SEPTEMBER 11-15, 2000: 28th Annual Advances in Family Practice. University of Washington, Seattle, WA. 33 hrs Cat 1. Contact Office of CME (206) 543-1050; Fax (206) 221-4525.

OCTOBER 4-7, 2000: 55th Annual Meeting—Overcoming Adversity: Hand Surgeons Shaping the 21st Century of Health Care including: Adrian E. Flatt Resident and Fellows Conference in Hand Surgery, Carpal Instability, Congenital Hand Differences, and Cumulative Trauma. American Society for Surgery of the Hand at Seattle, WA. Contact ASSH (847) 384-8300; Meetings@hand-surg.org; www.hand-surg.org.

WYOMING

All courses meet the criteria for Cat 1 of the Physician's Recognition Award of the AMA. To list AMA Category 1 CME courses here, send information at least two months in advance to the Medical Education Committee, Wyoming Medical Society, P.O. Box 4009, Cheyenne, WY 82009; email skeefe@wyomed.org: phone 307 634-2424; Fax 307 632-1973.

AUGUST 4-6, 2000: Issues in Women's Health. Snow King Resort, Jackson Hole, WY. 11 hrs Cat 1. Contact Medical Education Resources, (800) 421-3756; Fax (303) 798-5731; www.mer.org.

Medicine for what ails you

Douglas S Diekema

Douglas Diekema is a pediatric emergency medicine physician and director of medical ethics at Children's Hospital and Regional Medical Center in Seattle, Washington

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